FIG. 1

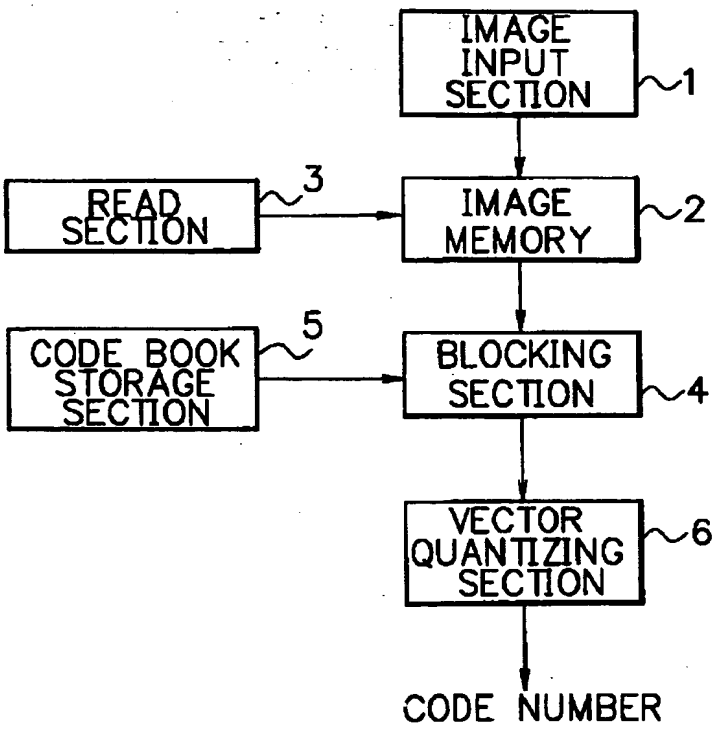


FIG. 2

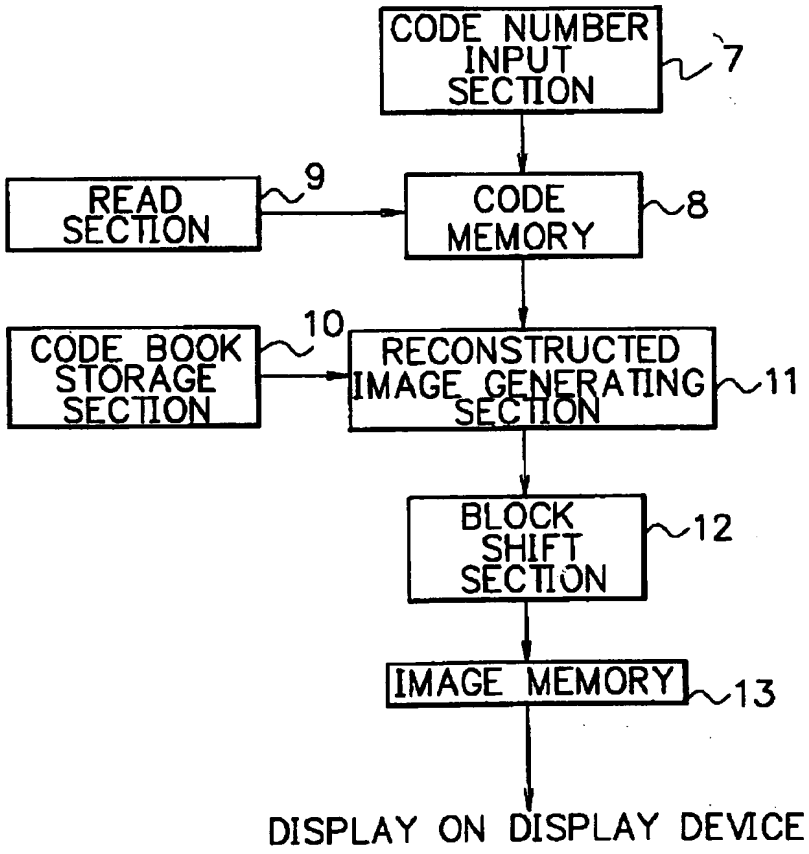

CODE NUMBER INPUT SECTION
7
READ SECTION
9
CODE MEMORY
8
CODE BOOK STORAGE SECTION
10
RECONSTRUCTED IMAGE GENERATING SECTION
11
BLOCK SHIFT SECTION
12
IMAGE MEMORY
13
DISPLAY ON DISPLAY DEVICE

FIG. 3

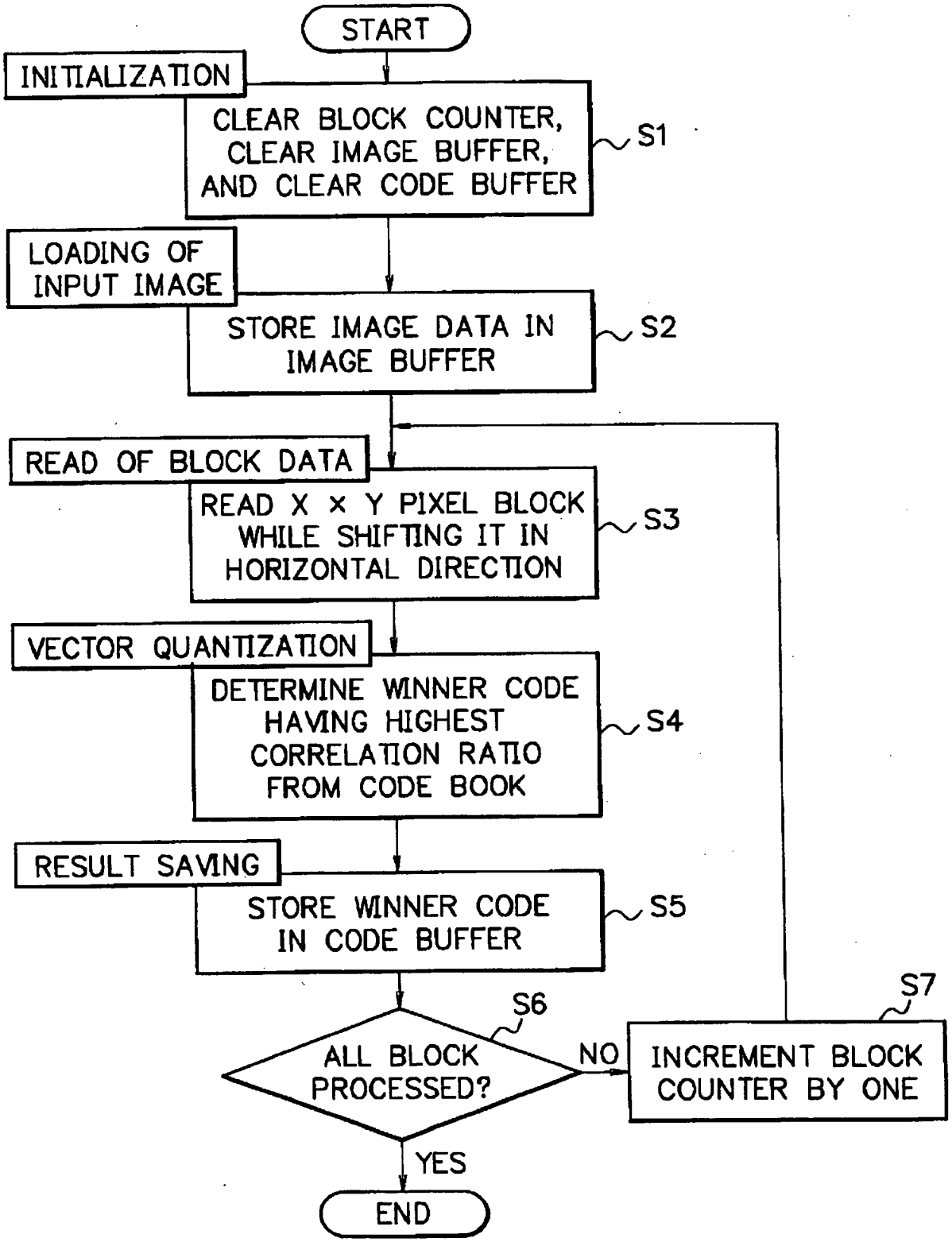

START
INITIALIZATION
CLEAR BLOCK COUNTER, CLEAR IMAGE BUFFER, AND CLEAR CODE BUFFER
S1
LOADING OF INPUT IMAGE
STORE IMAGE DATA IN IMAGE BUFFER
S2
READ OF BLOCK DATA
READ X × Y PIXEL BLOCK WHILE SHIFTING IT IN HORIZONTAL DIRECTION
S3
VECTOR QUANTIZATION
DETERMINE WINNER CODE HAVING HIGHEST CORRELATION RATIO FROM CODE BOOK
S4
RESULT SAVING
STORE WINNER CODE IN CODE BUFFER
S5
S6
ALL BLOCK PROCESSED?
NO
S7
INCREMENT BLOCK COUNTER BY ONE
YES
END

FIG.

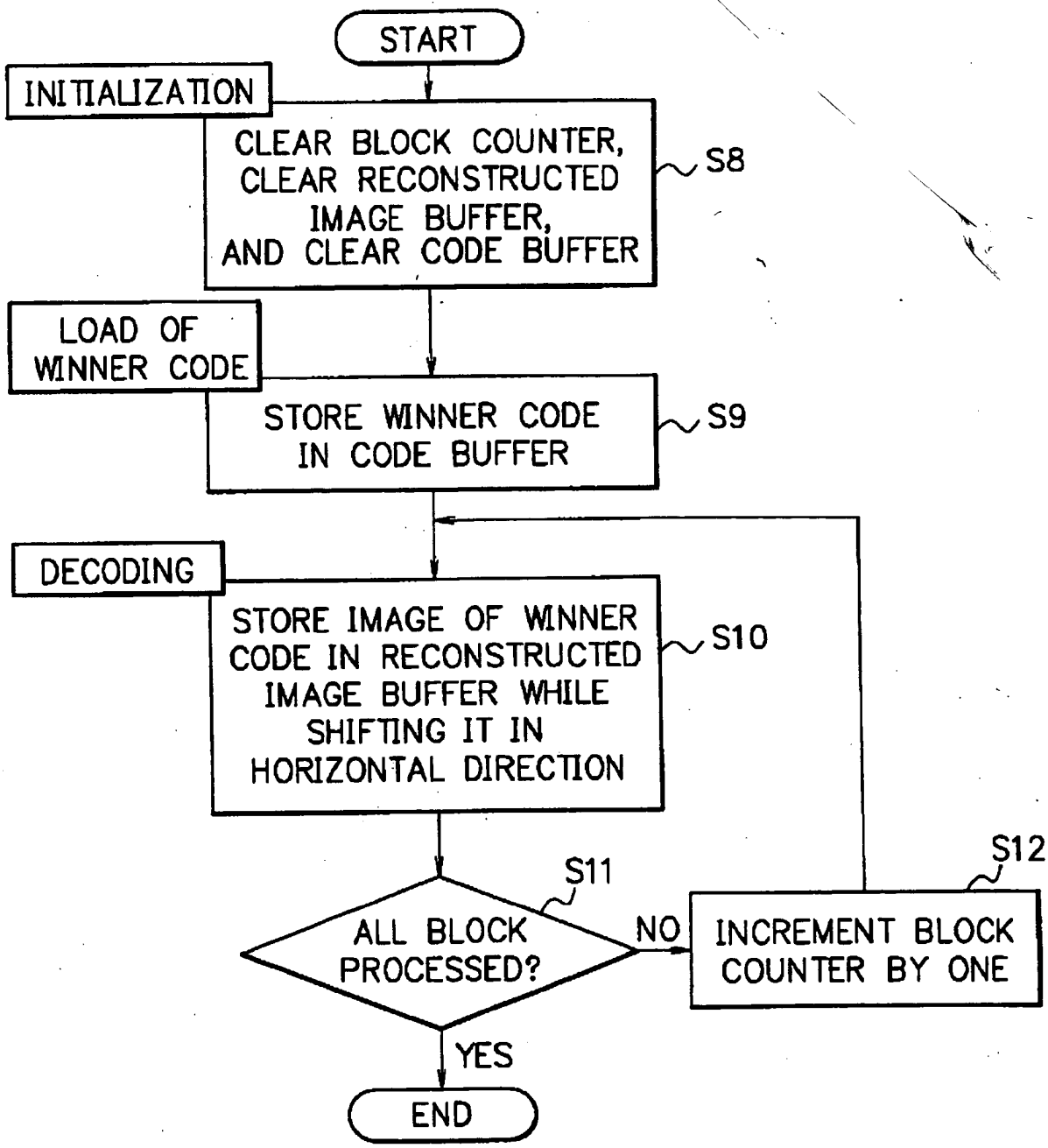

START
INITIALIZATION
CLEAR BLOCK COUNTER, CLEAR RECONSTRUCTED IMAGE BUFFER, AND CLEAR CODE BUFFER
S8
LOAD OF WINNER CODE
STORE WINNER CODE IN CODE BUFFER
S9
DECODING
STORE IMAGE OF WINNER CODE IN RECONSTRUCTED IMAGE BUFFER WHILE SHIFTING IT IN HORIZONTAL DIRECTION
S10
S11
ALL BLOCK PROCESSED?
NO
S12
INCREMENT BLOCK COUNTER BY ONE
YES
END

FIG. 5

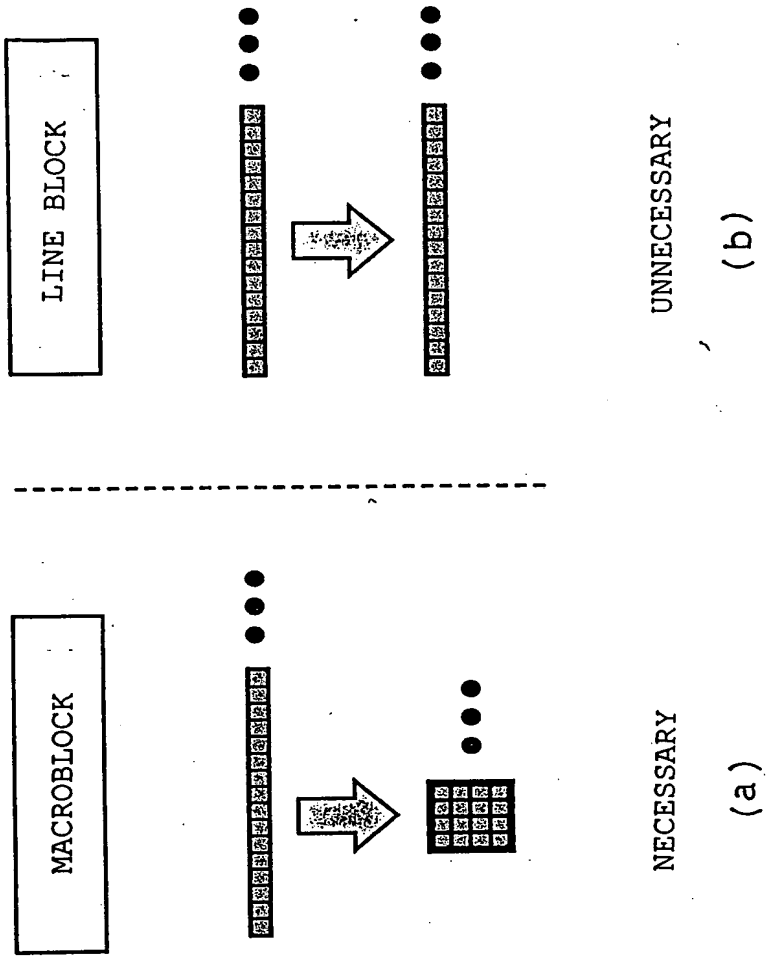

LINE BLOCK
MACROBLOCK
CODE BOOK MEMORY
DISPLAY MEMORY
ADDRESS CONVERSION
NECESSARY
(a)
UNNECESSARY
(b)

FIG. 6

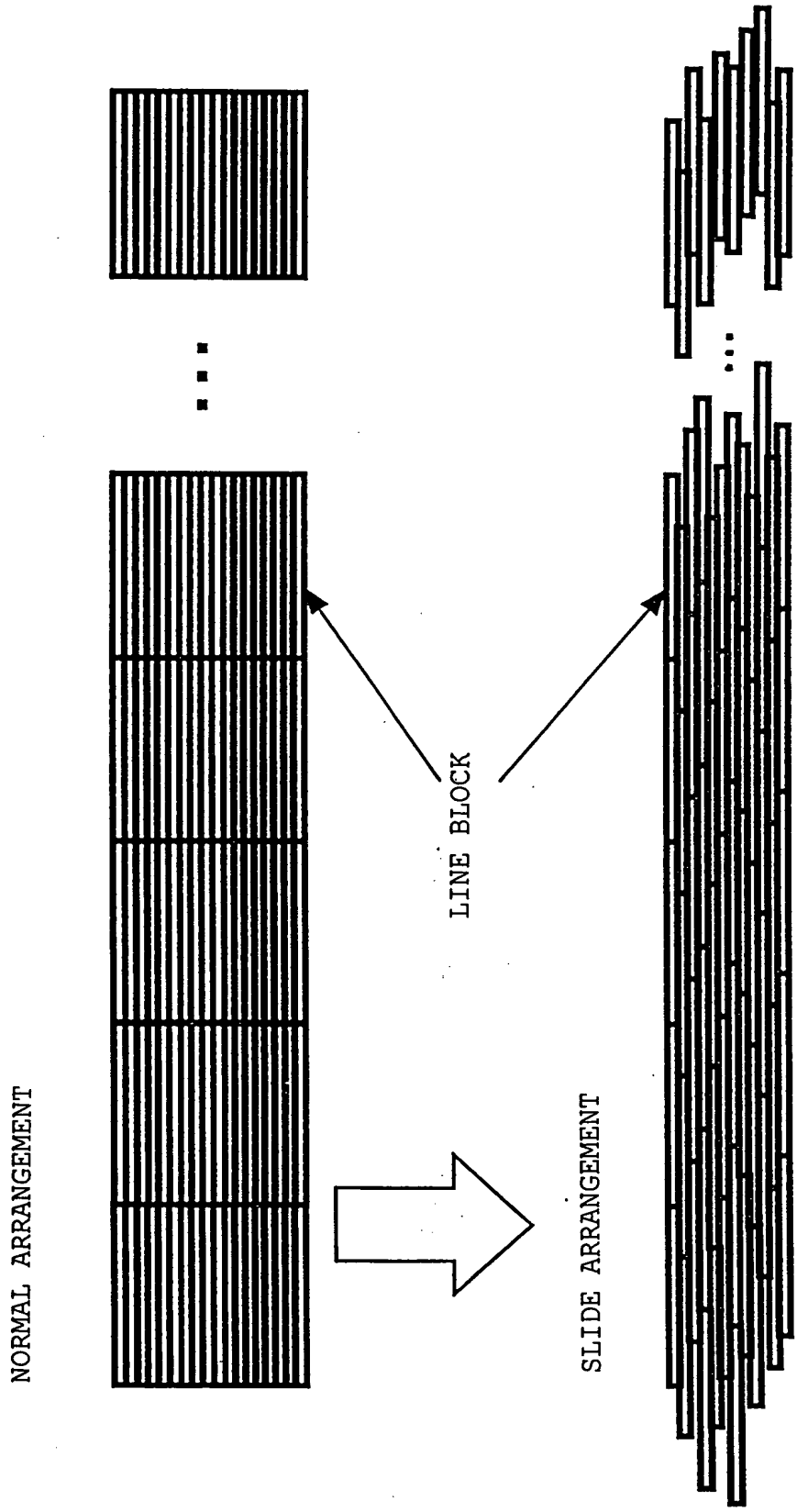


FIG. 7

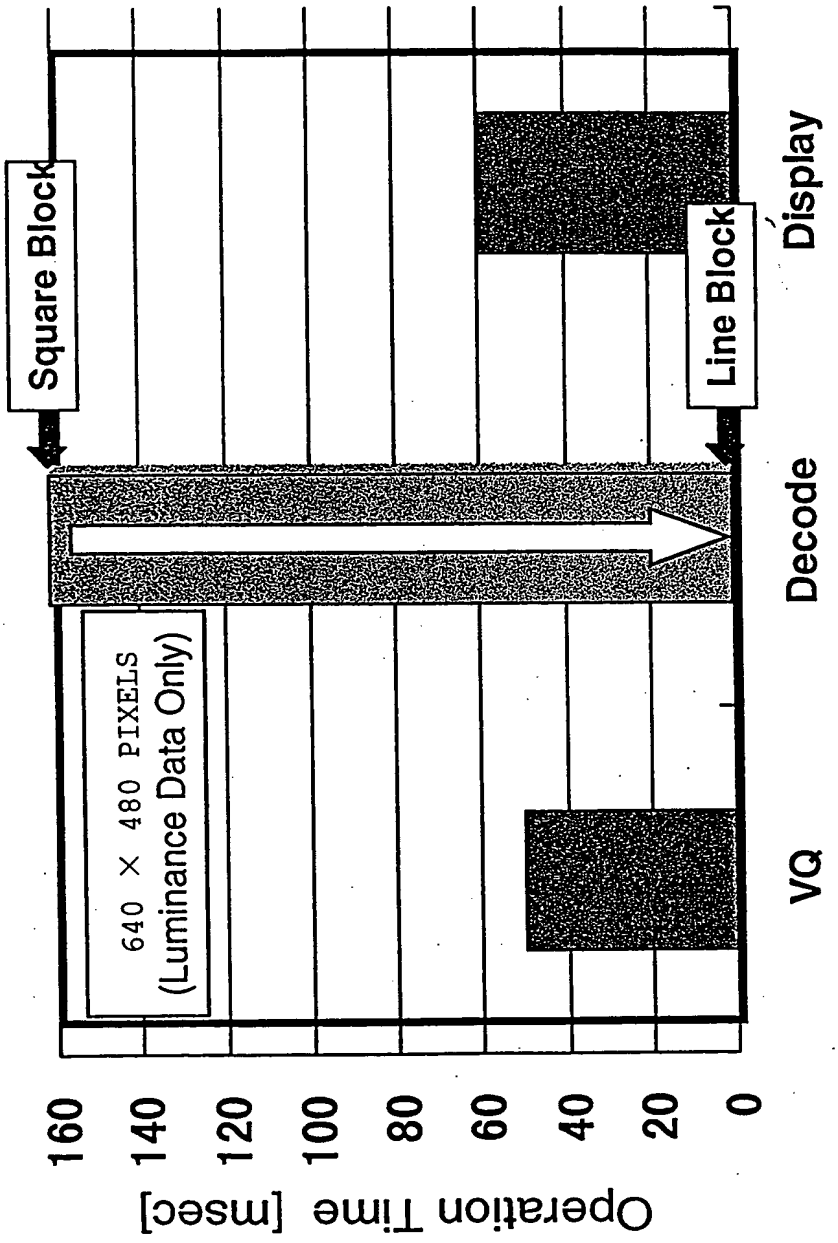

Square Block
Line Block
Display
Decode
VQ
640 × 480 PIXELS
(Luminance Data Only)
160
140
120
100
80
60
40
20
0
Operation Time [msec]

FIG. 8

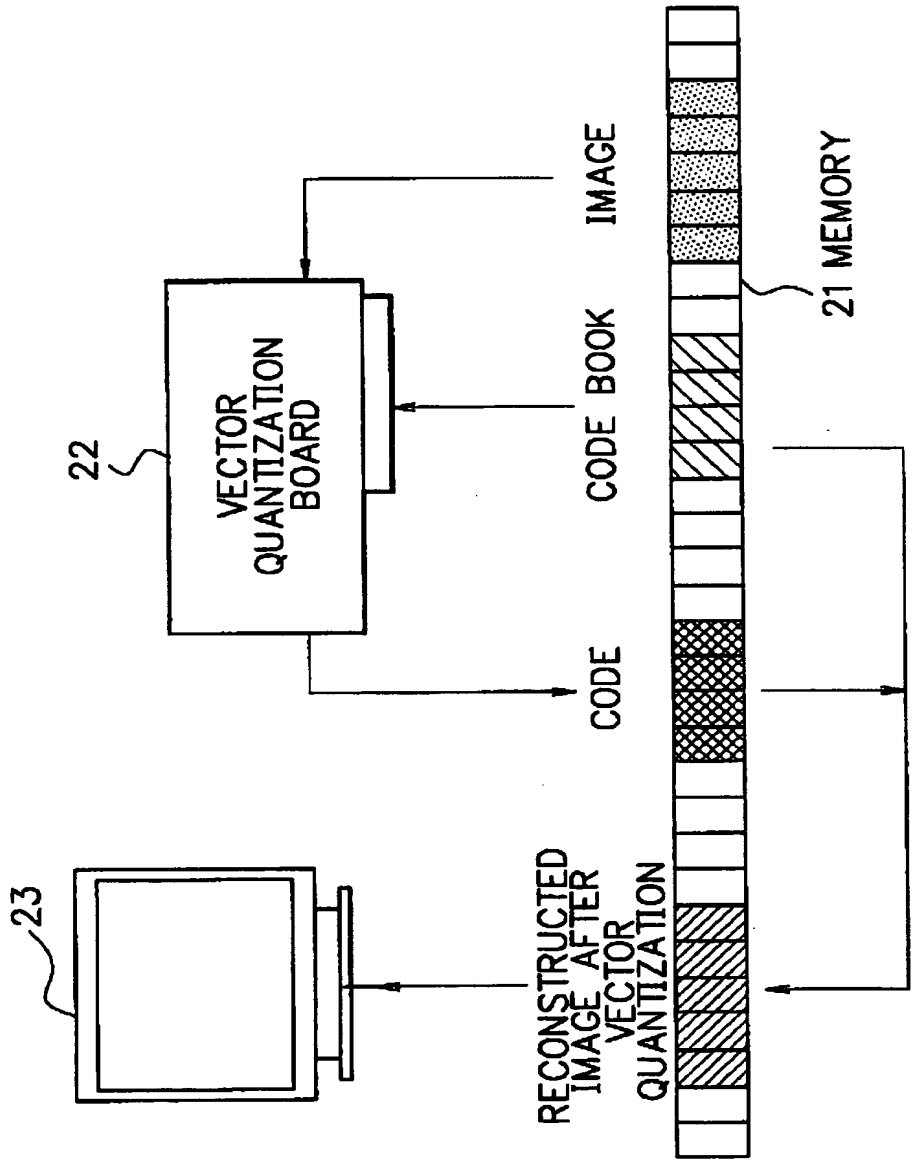


IMAGE
21 MEMORY
22
VECTOR QUANTIZATION BOARD
CODE BOOK
CODE
23
RECONSTRUCTED IMAGE AFTER VECTOR QUANTIZATION

FIG. 9

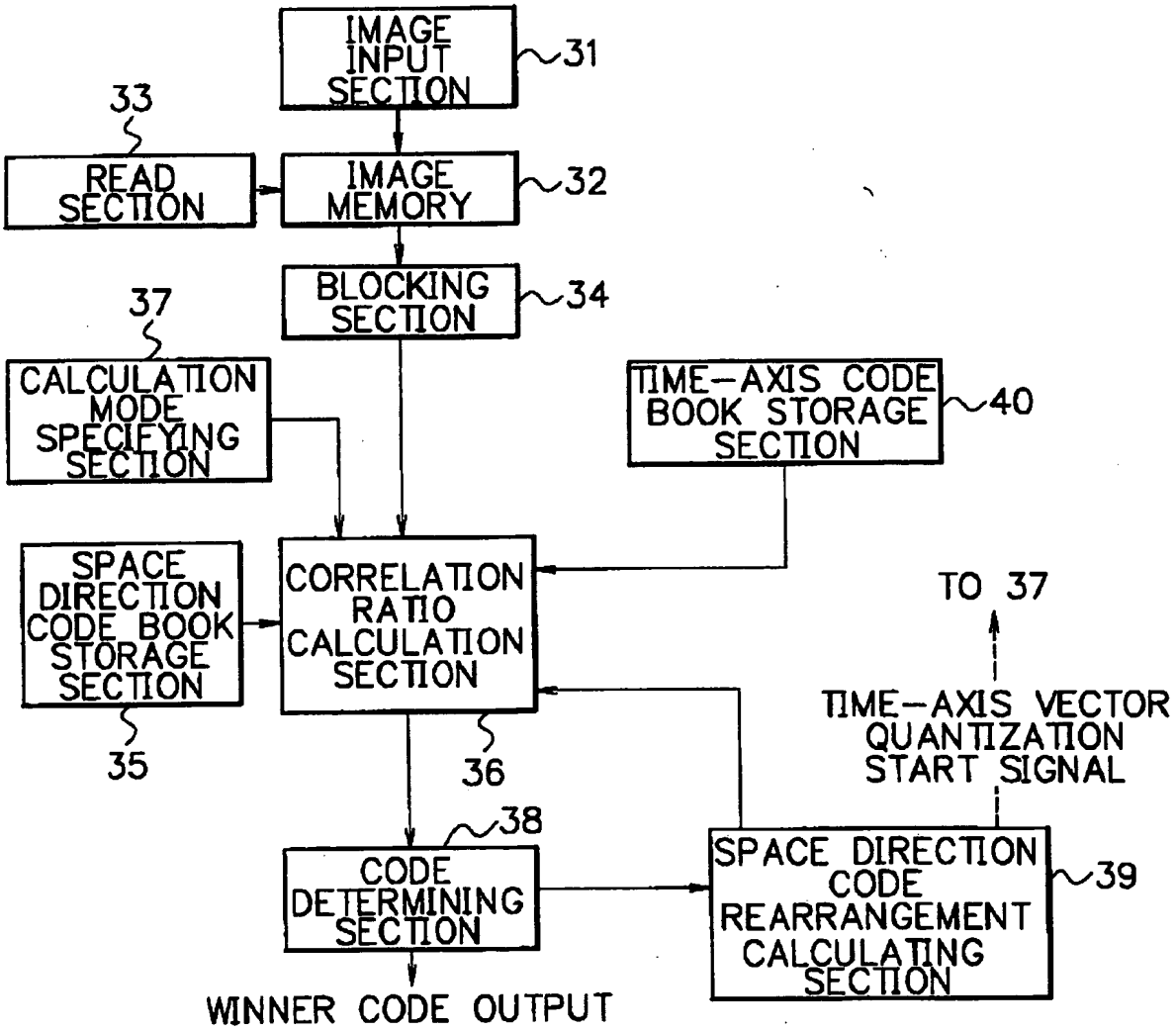


IMAGE INPUT SECTION
31
33
READ SECTION
IMAGE MEMORY
32
BLOCKING SECTION
34
37
CALCULATION MODE SPECIFYING SECTION
TIME-AXIS CODE BOOK STORAGE SECTION
40
SPACE DIRECTION CODE BOOK STORAGE SECTION
CORRELATION RATIO CALCULATION SECTION
TO 37
TIME-AXIS VECTOR QUANTIZATION START SIGNAL
35
36
38
CODE DETERMINING SECTION
SPACE DIRECTION CODE REARRANGEMENT CALCULATING SECTION
39
WINNER CODE OUTPUT

FIG. 10

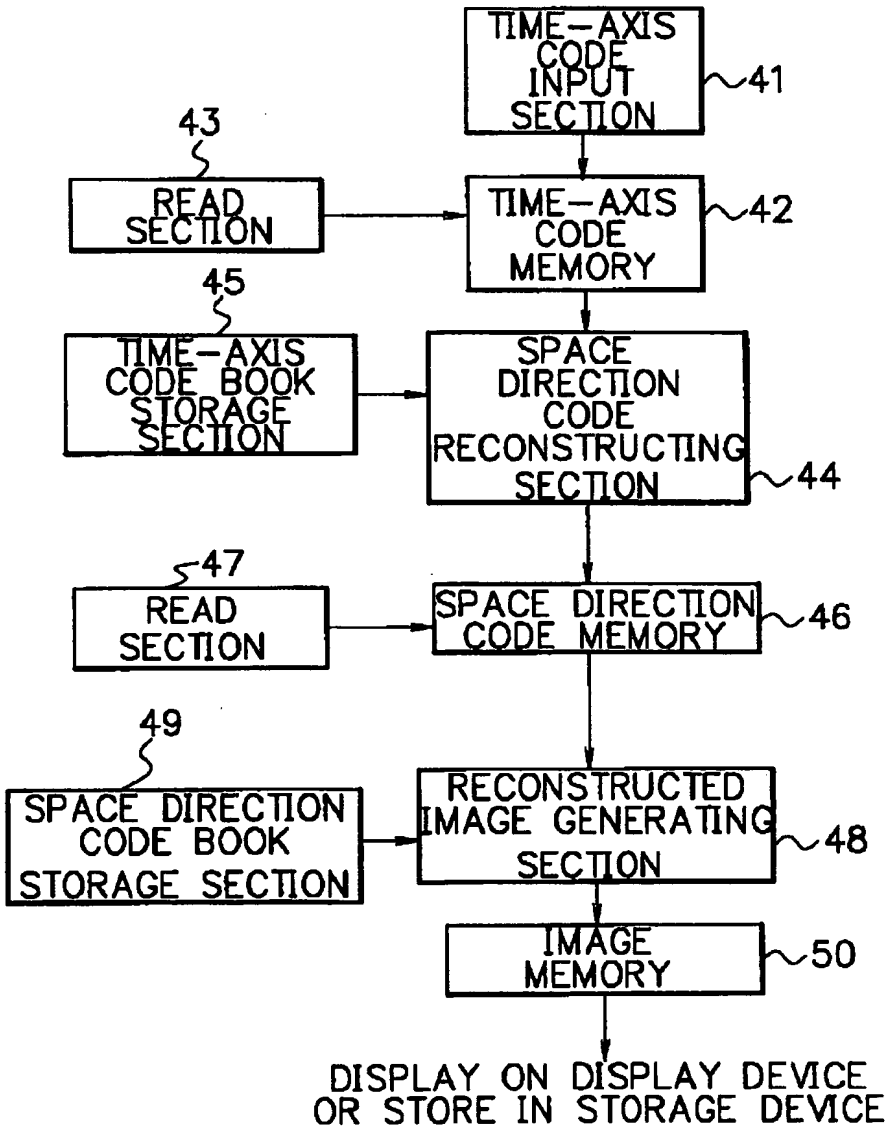

TIME-AXIS CODE INPUT SECTION
41
43
READ SECTION
TIME-AXIS CODE MEMORY
42
45
TIME-AXIS CODE BOOK STORAGE SECTION
SPACE DIRECTION CODE RECONSTRUCTING SECTION
44
47
READ SECTION
SPACE DIRECTION CODE MEMORY
46
49
SPACE DIRECTION CODE BOOK STORAGE SECTION
RECONSTRUCTED IMAGE GENERATING SECTION
48
IMAGE MEMORY
50
DISPLAY ON DISPLAY DEVICE OR STORE IN STORAGE DEVICE

FIG. 11

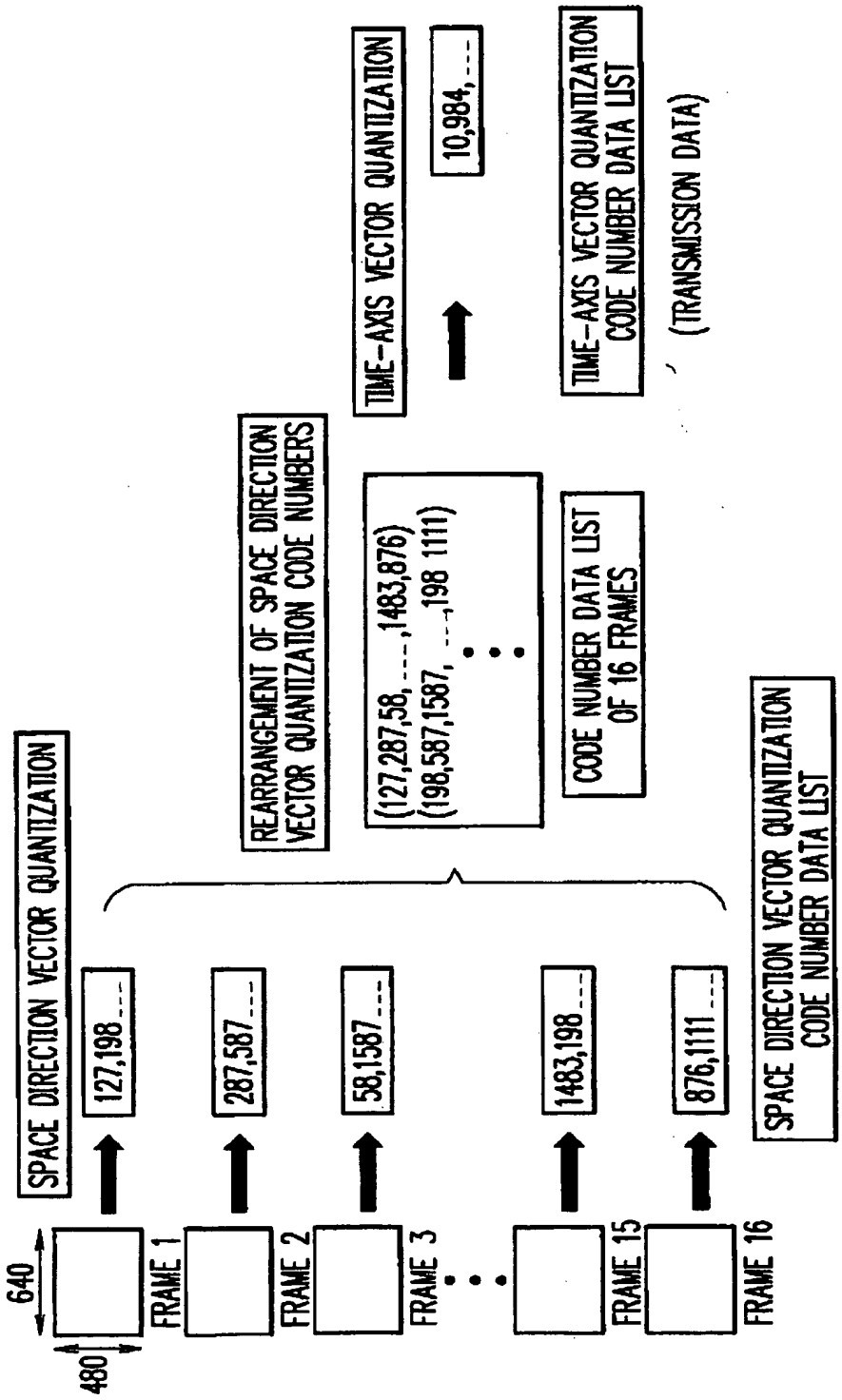

640
480
FRAME 1
FRAME 2
FRAME 3
FRAME 15
FRAME 16
SPACE DIRECTION VECTOR QUANTIZATION
127,198---
287,587---
58,1587---
1483,198---
876,1111---
SPACE DIRECTION VECTOR QUANTIZATION CODE NUMBER DATA LIST
REARRANGEMENT OF SPACE DIRECTION VECTOR QUANTIZATION CODE NUMBERS
((127,287,58,---,1483,876)
(198,587,1587,---,198 1111)
CODE NUMBER DATA LIST OF 16 FRAMES
TIME-AXIS VECTOR QUANTIZATION
10,984,---
TIME-AXIS VECTOR QUANTIZATION CODE NUMBER DATA LIST
(TRANSMISSION DATA)

FIG. 12

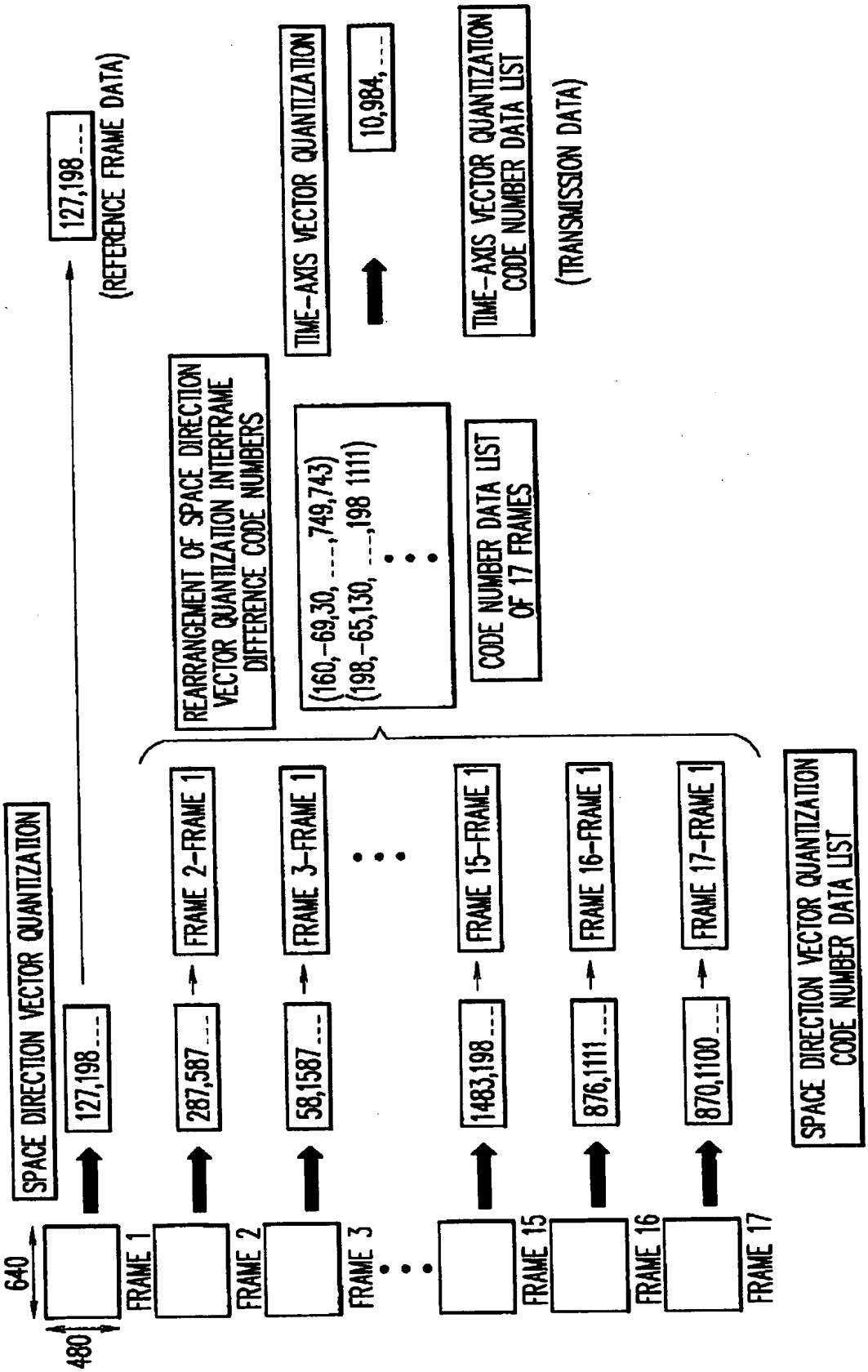

640
480
FRAME 1
FRAME 2
FRAME 3
FRAME 15
FRAME 16
FRAME 17
SPACE DIRECTION VECTOR QUANTIZATION
127,198...
(REFERENCE FRAME DATA)
287,587...
58,1587...
1483,198...
876,1111...
870,1100...
FRAME 2-FRAME 1
FRAME 3-FRAME 1
FRAME 15-FRAME 1
FRAME 16-FRAME 1
FRAME 17-FRAME 1
REARRANGEMENT OF SPACE DIRECTION VECTOR QUANTIZATION INTERFRAME DIFFERENCE CODE NUMBERS
(160,-69,30, ...,749,743)
(198,-65,130, ...,198 1111)
CODE NUMBER DATA LIST OF 17 FRAMES
TIME-AXIS VECTOR QUANTIZATION
10,984,...
TIME-AXIS VECTOR QUANTIZATION CODE NUMBER DATA LIST
(TRANSMISSION DATA)
SPACE DIRECTION VECTOR QUANTIZATION CODE NUMBER DATA LIST

FIG. 13

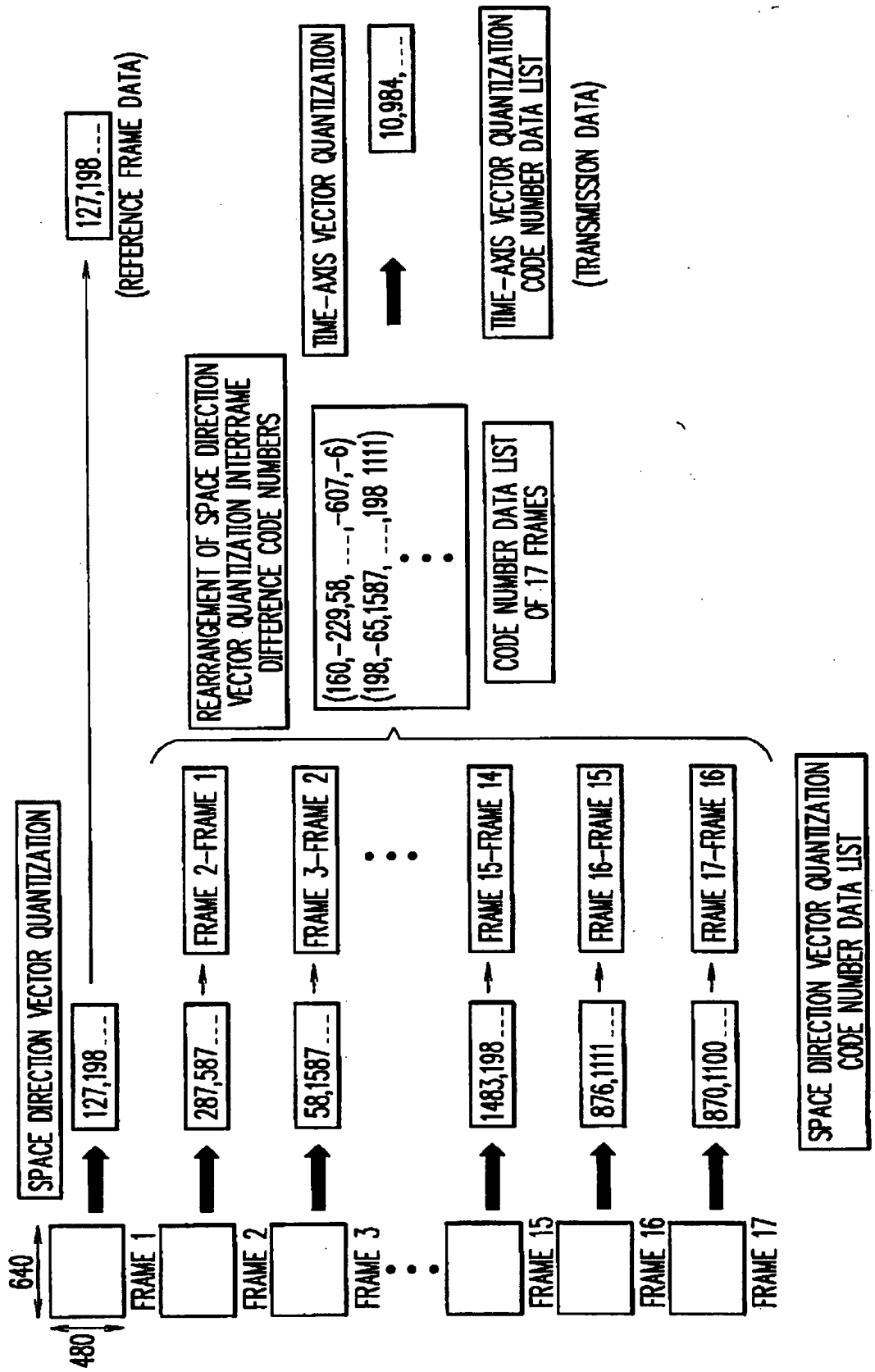

640
480
FRAME 1
FRAME 2
FRAME 3
FRAME 15
FRAME 16
FRAME 17
SPACE DIRECTION VECTOR QUANTIZATION
127,198...
287,587...
58,1587...
1483,198...
876,1111...
870,1100...
(REFERENCE FRAME DATA)
FRAME 2-FRAME 1
FRAME 3-FRAME 2
FRAME 15-FRAME 14
FRAME 16-FRAME 15
FRAME 17-FRAME 16
REARRANGEMENT OF SPACE DIRECTION VECTOR QUANTIZATION INTERFRAME DIFFERENCE CODE NUMBERS
(160,-229,58,...,-607,-6)
(198,-65,1587,...,198 1111)
CODE NUMBER DATA LIST OF 17 FRAMES
TIME-AXIS VECTOR QUANTIZATION
10,984,...
TIME-AXIS VECTOR QUANTIZATION CODE NUMBER DATA LIST
(TRANSMISSION DATA)
SPACE DIRECTION VECTOR QUANTIZATION CODE NUMBER DATA LIST

FIG. 14

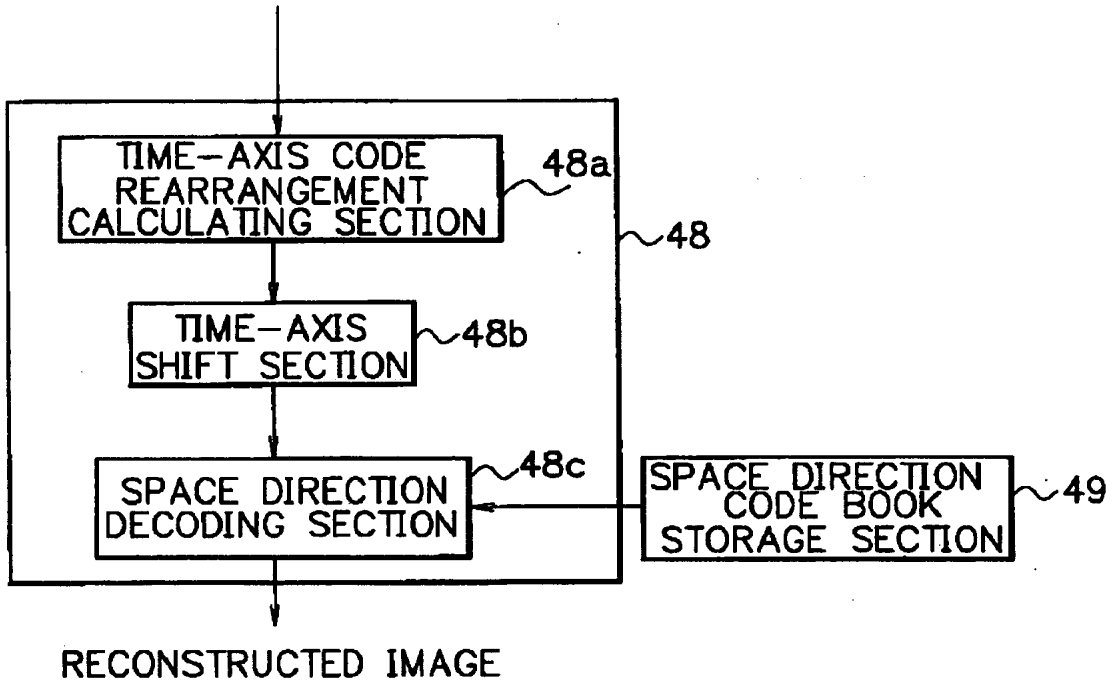

TIME-AXIS CODE REARRANGEMENT CALCULATING SECTION
48a
48
TIME-AXIS SHIFT SECTION
48b
SPACE DIRECTION DECODING SECTION
48c
SPACE DIRECTION CODE BOOK STORAGE SECTION
49
RECONSTRUCTED IMAGE

FIG. 15

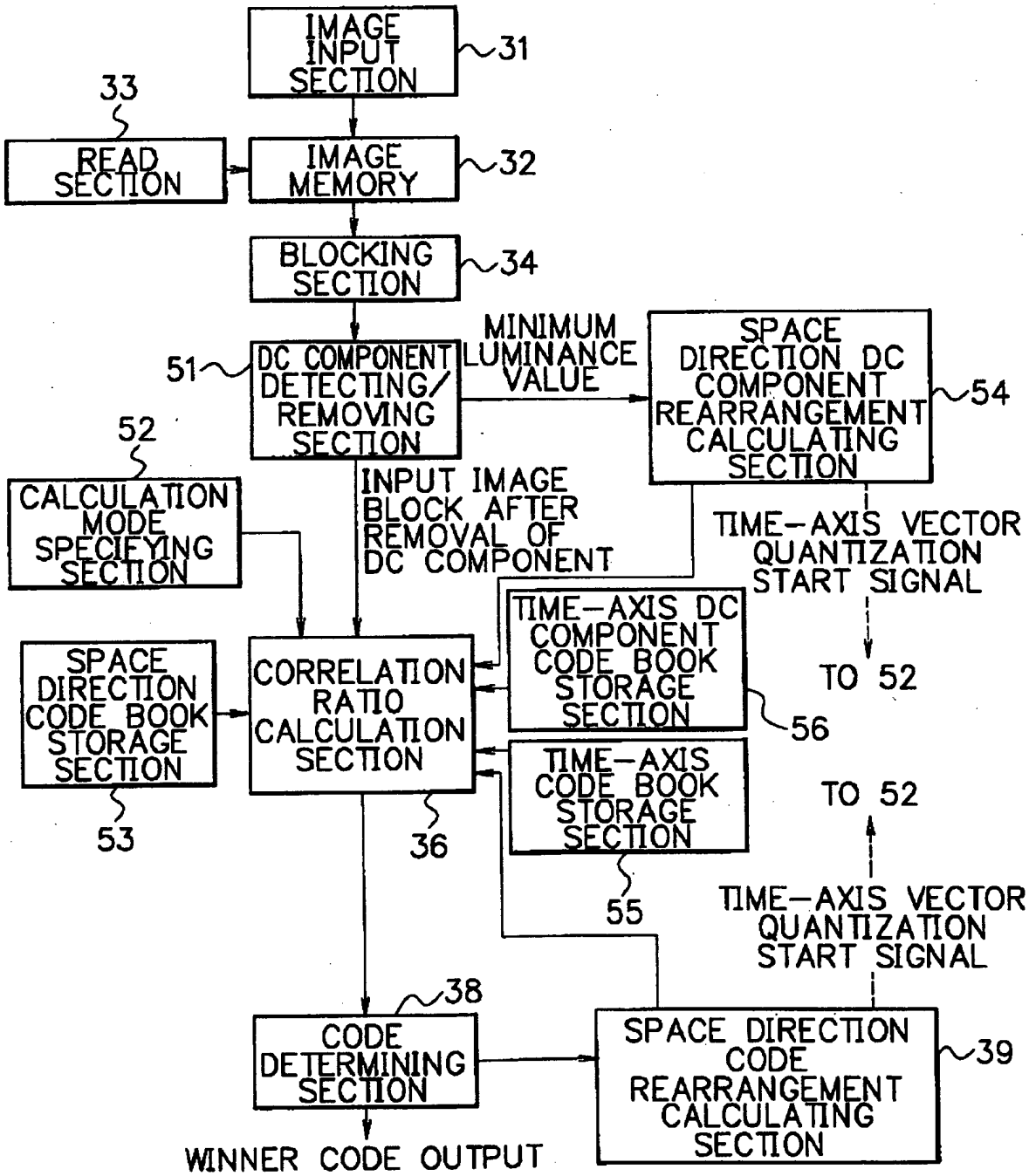


IMAGE INPUT SECTION
31
33
READ SECTION
IMAGE MEMORY
32
BLOCKING SECTION
34
51
DC COMPONENT DETECTING/ REMOVING SECTION
MINIMUM LUMINANCE VALUE
SPACE DIRECTION DC COMPONENT REARRANGEMENT CALCULATING SECTION
54
52
CALCULATION MODE SPECIFYING SECTION
INPUT IMAGE BLOCK AFTER REMOVAL OF DC COMPONENT
TIME-AXIS VECTOR QUANTIZATION START SIGNAL
TIME-AXIS DC COMPONENT CODE BOOK STORAGE SECTION
TO 52
56
SPACE DIRECTION CODE BOOK STORAGE SECTION
CORRELATION RATIO CALCULATION SECTION
TIME-AXIS CODE BOOK STORAGE SECTION
TO 52
53
36
55
TIME-AXIS VECTOR QUANTIZATION START SIGNAL
38
CODE DETERMINING SECTION
SPACE DIRECTION CODE REARRANGEMENT CALCULATING SECTION
39
WINNER CODE OUTPUT

FIG. 16

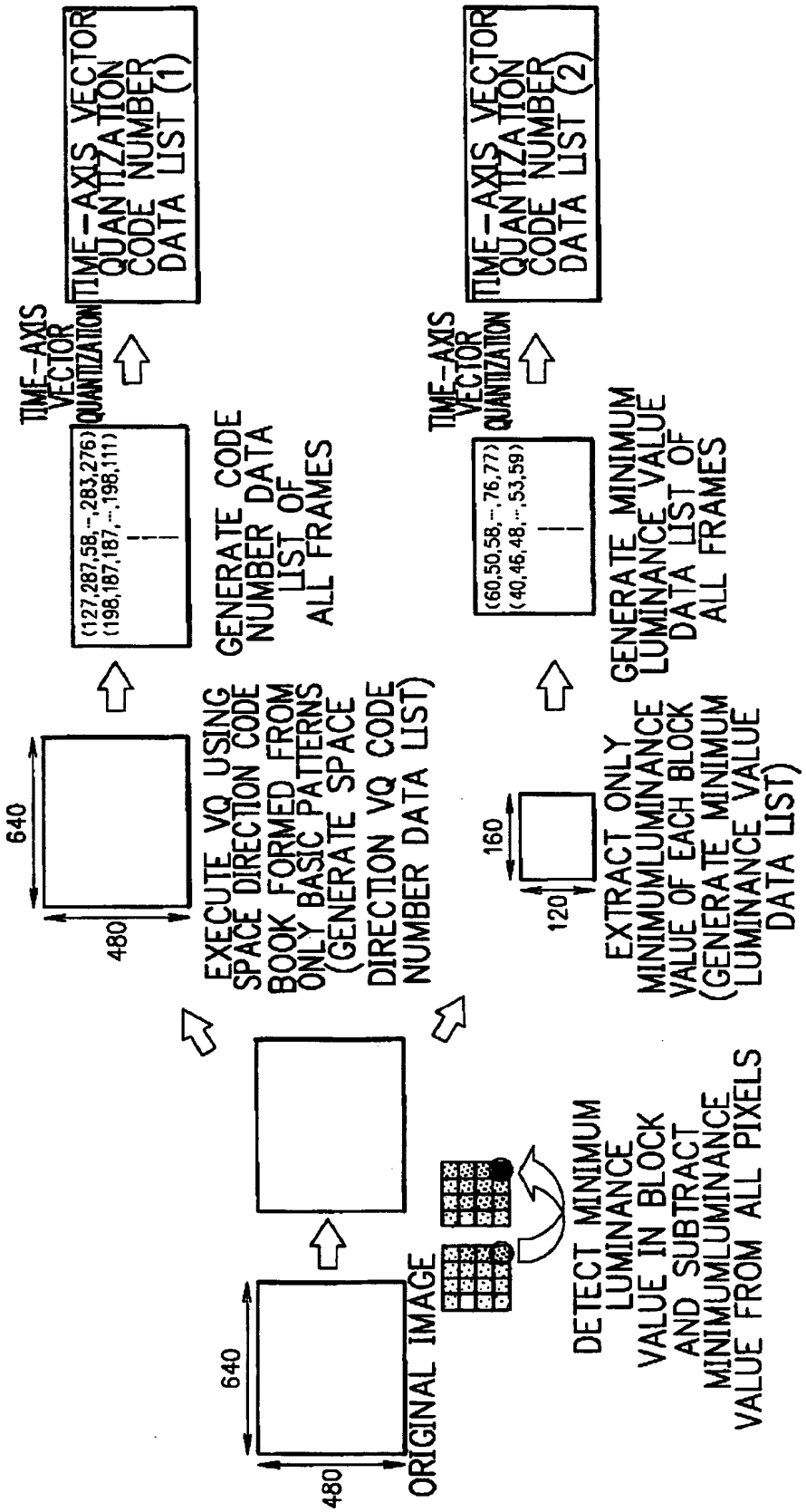

ORIGINAL IMAGE
640
480
DETECT MINIMUM LUMINANCE VALUE IN BLOCK AND SUBTRACT MINIMUMLUMINANCE VALUE FROM ALL PIXELS
EXECUTE VQ USING SPACE DIRECTION CODE BOOK FORMED FROM ONLY BASIC PATTERNS (GENERATE SPACE DIRECTION VQ CODE NUMBER DATA LIST)
640
480
GENERATE CODE NUMBER DATA LIST OF ALL FRAMES
(127,287,58,...,283,276)
(198,187,187,...,198,111)
TIME-AXIS VECTOR QUANTIZATION
TIME-AXIS VECTOR QUANTIZATION CODE NUMBER DATA LIST (1)
EXTRACT ONLY MINIMUMLUMINANCE VALUE OF EACH BLOCK (GENERATE MINIMUM LUMINANCE VALUE DATA LIST)
160
120
GENERATE MINIMUM LUMINANCE VALUE DATA LIST OF ALL FRAMES
(60,50,58,...,76,77)
(40,46,48,...,53,59)
TIME-AXIS VECTOR QUANTIZATION
TIME-AXIS VECTOR QUANTIZATION CODE NUMBER DATA LIST (2)

FIG. 17

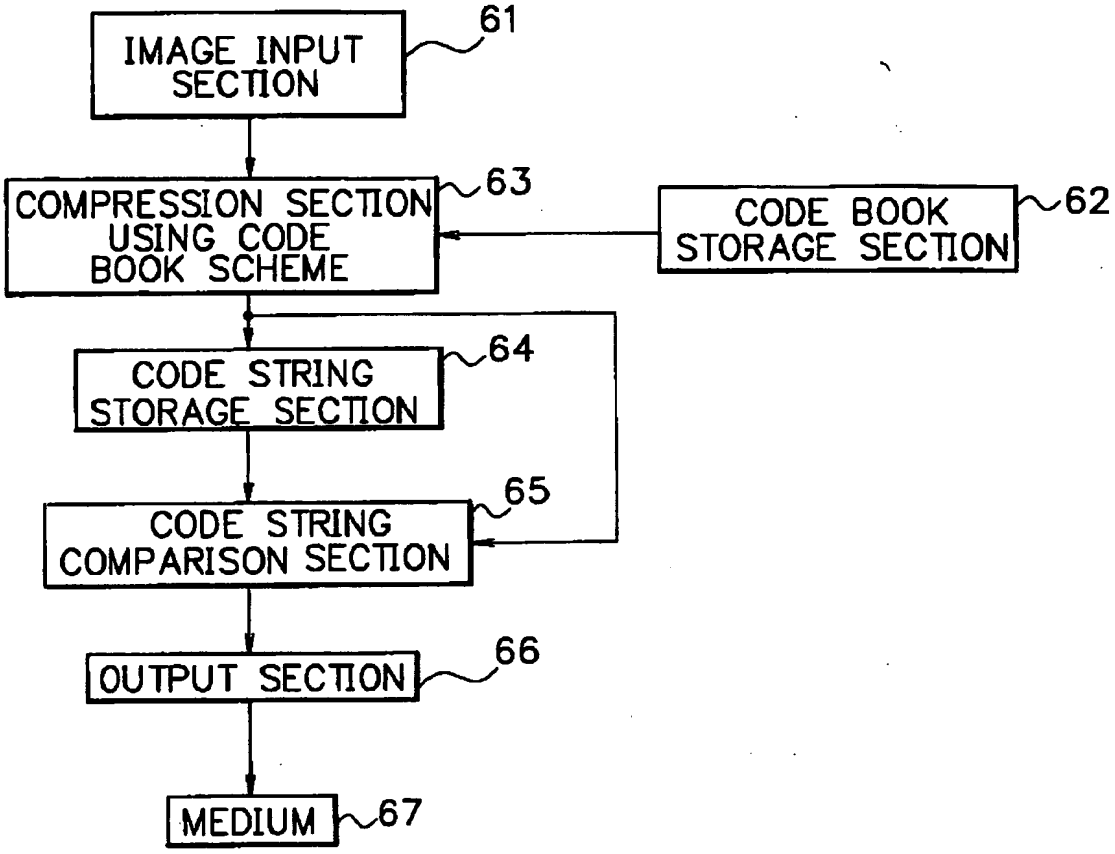


IMAGE INPUT SECTION
61
COMPRESSION SECTION USING CODE BOOK SCHEME
63
CODE BOOK STORAGE SECTION
62
CODE STRING STORAGE SECTION
64
CODE STRING COMPARISON SECTION
65
OUTPUT SECTION
66
MEDIUM
67

FIG. 18

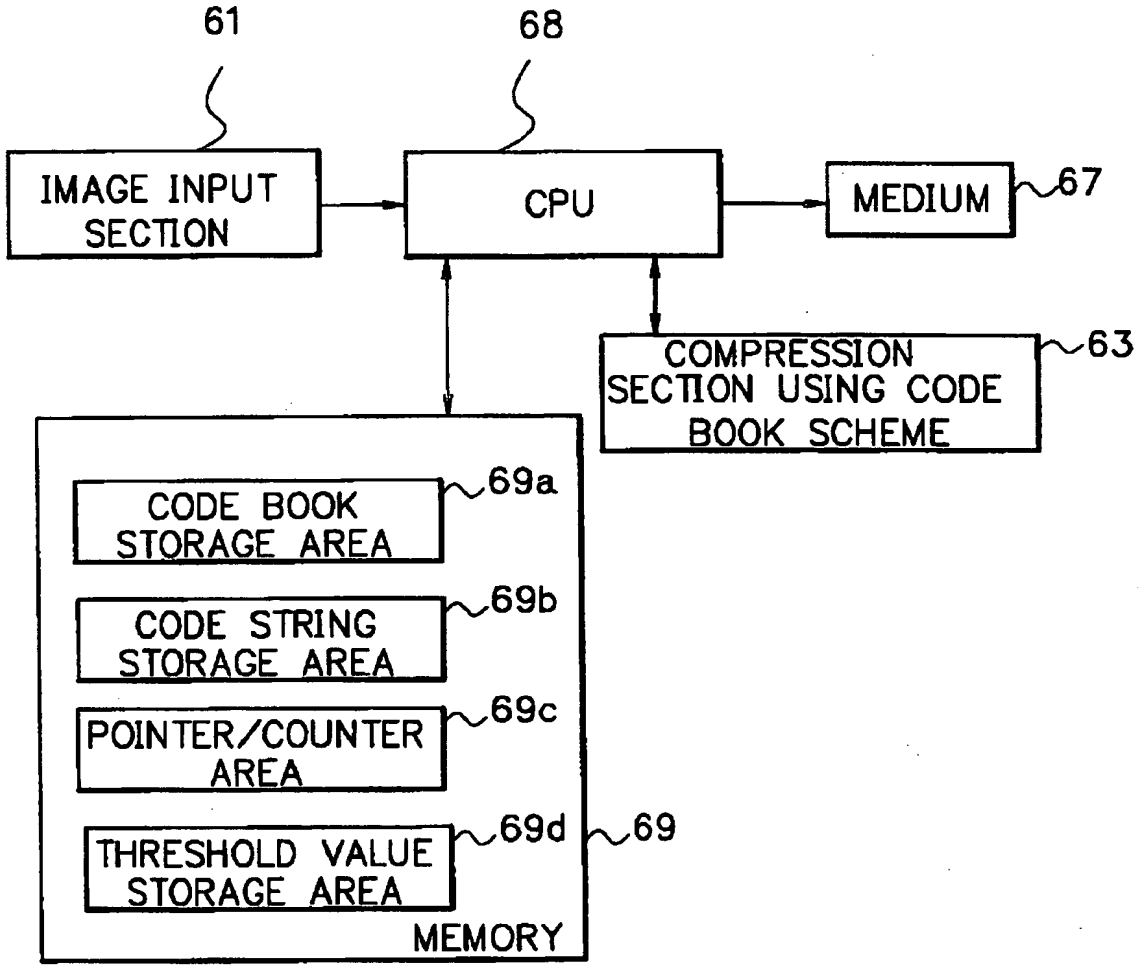

61
68
IMAGE INPUT SECTION
CPU
MEDIUM
67
COMPRESSION SECTION USING CODE BOOK SCHEME
63
CODE BOOK STORAGE AREA
69a
CODE STRING STORAGE AREA
69b
POINTER/COUNTER AREA
69c
THRESHOLD VALUE STORAGE AREA
69d
69
MEMORY

FIG. 19

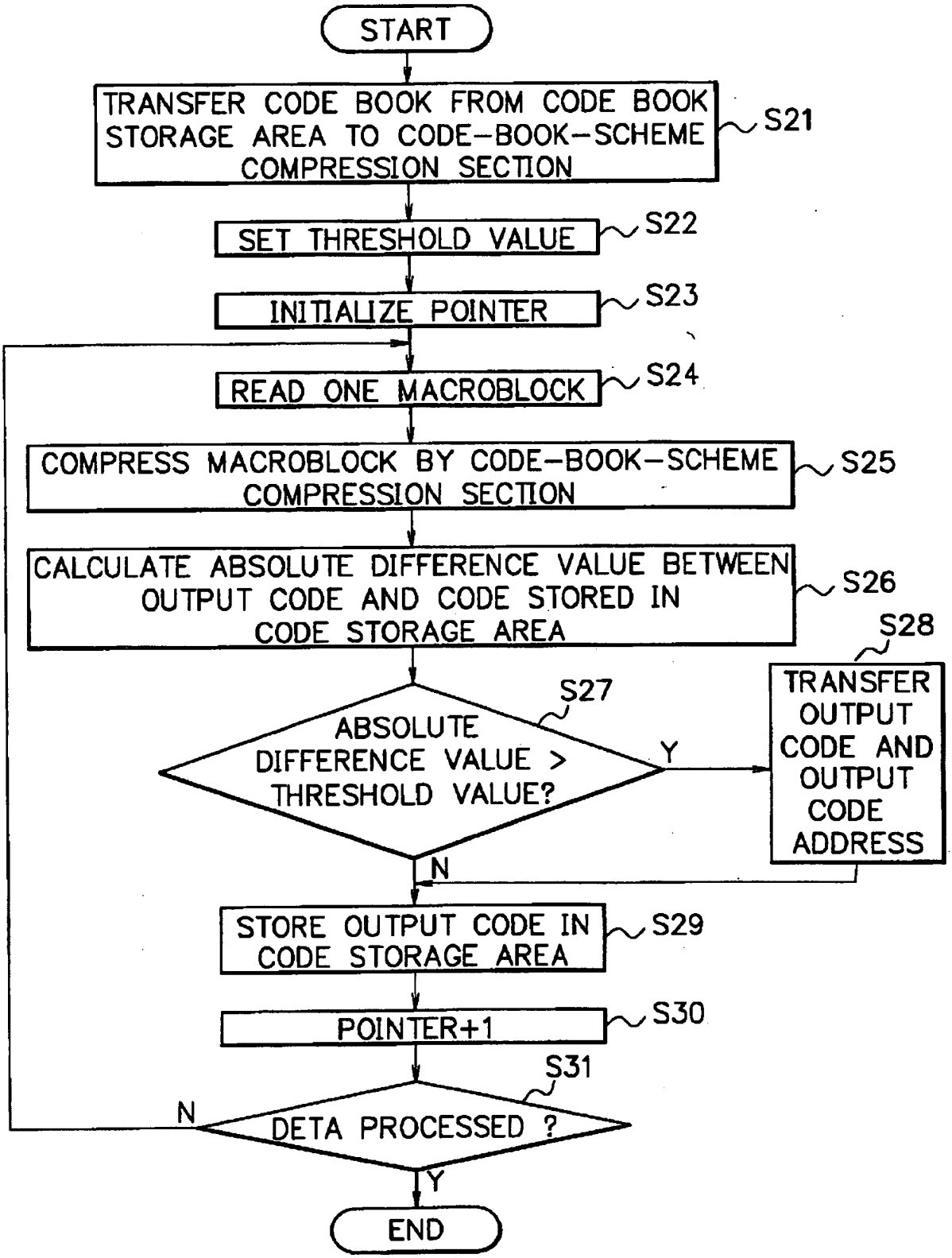

START
TRANSFER CODE BOOK FROM CODE BOOK STORAGE AREA TO CODE-BOOK-SCHEME COMPRESSION SECTION
S21
SET THRESHOLD VALUE
S22
INITIALIZE POINTER
S23
READ ONE MACROBLOCK
S24
COMPRESS MACROBLOCK BY CODE-BOOK-SCHEME COMPRESSION SECTION
S25
CALCULATE ABSOLUTE DIFFERENCE VALUE BETWEEN OUTPUT CODE AND CODE STORED IN CODE STORAGE AREA
S26
S27
ABSOLUTE DIFFERENCE VALUE > THRESHOLD VALUE?
Y
N
S28
TRANSFER OUTPUT CODE AND OUTPUT CODE ADDRESS
STORE OUTPUT CODE IN CODE STORAGE AREA
S29
POINTER+1
S30
S31
DETA PROCESSED ?
N
Y
END

FIG. 20

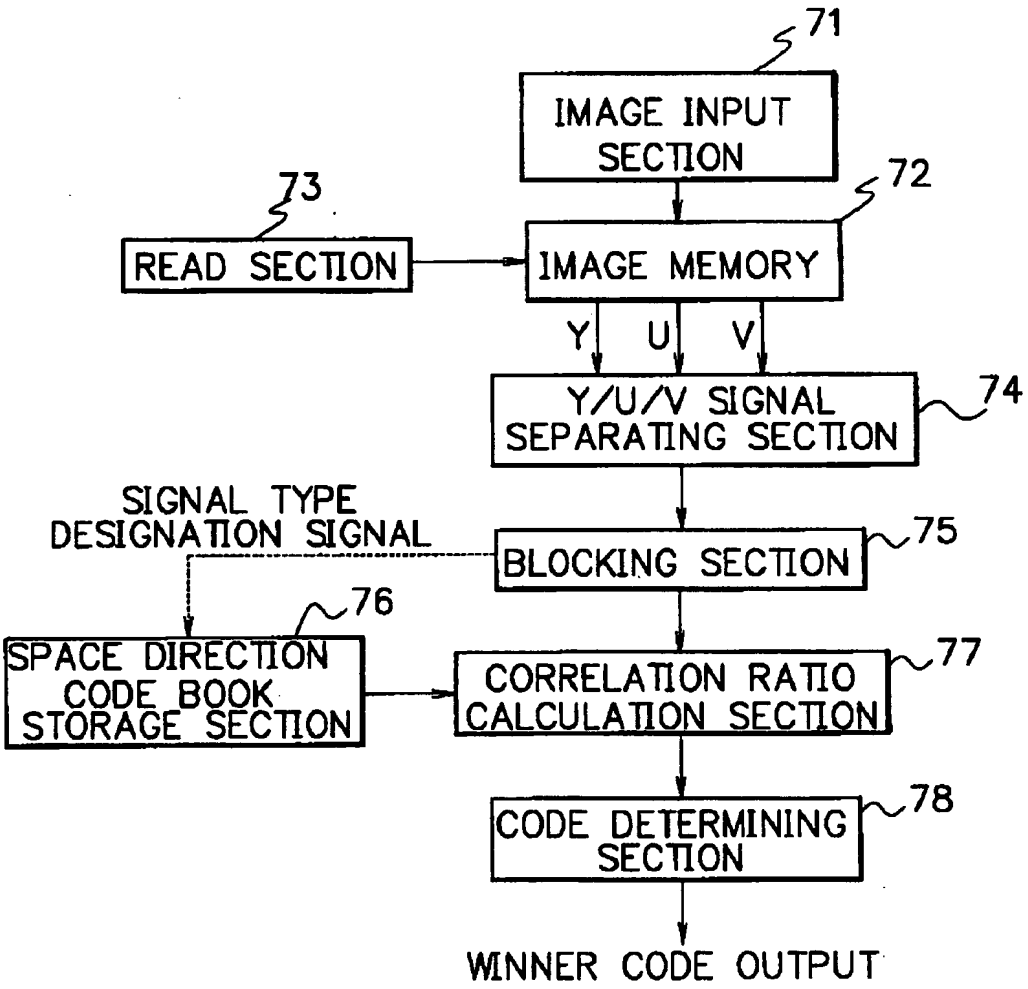

71
IMAGE INPUT SECTION
72
IMAGE MEMORY
73
READ SECTION
Y
U
V
Y/U/V SIGNAL SEPARATING SECTION
74
SIGNAL TYPE DESIGNATION SIGNAL
BLOCKING SECTION
75
76
SPACE DIRECTION CODE BOOK STORAGE SECTION
CORRELATION RATIO CALCULATION SECTION
77
CODE DETERMINING SECTION
78
WINNER CODE OUTPUT

FIG. 21

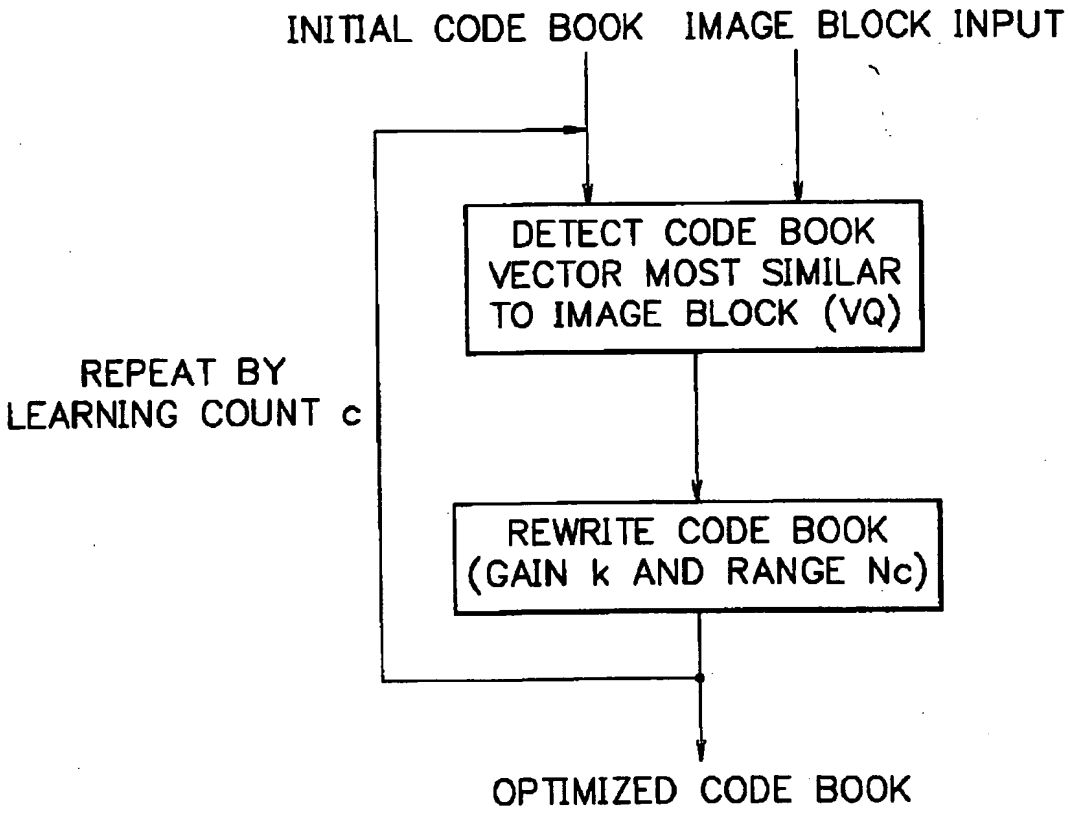

INITIAL CODE BOOK
IMAGE BLOCK INPUT
DETECT CODE BOOK VECTOR MOST SIMILAR TO IMAGE BLOCK (VQ)
REPEAT BY LEARNING COUNT c
REWRITE CODE BOOK (GAIN k AND RANGE Nc)
OPTIMIZED CODE BOOK

FIG. 22

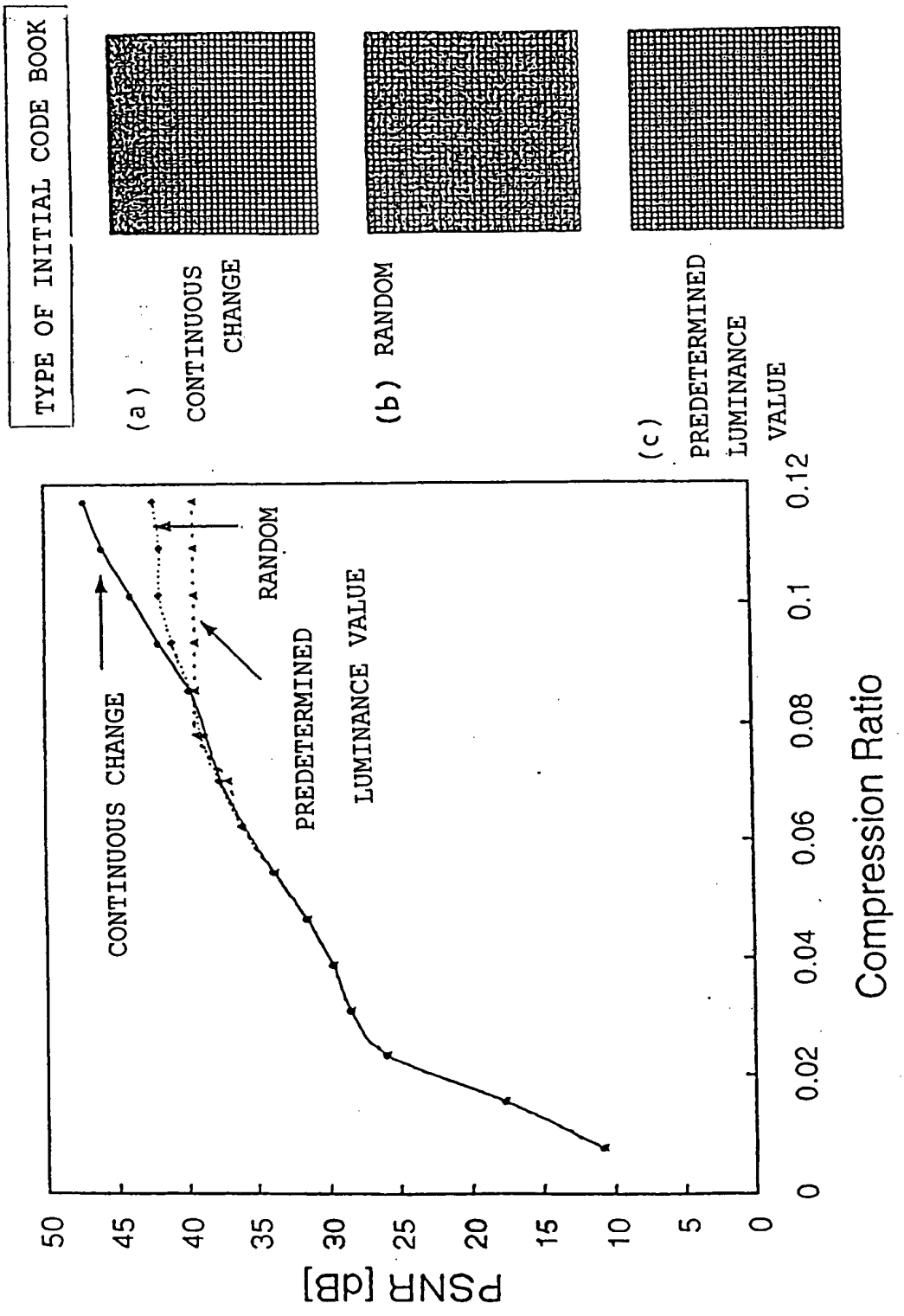

TYPE OF INITIAL CODE BOOK
(a) CONTINUOUS CHANGE
(b) RANDOM
(c) PREDETERMINED LUMINANCE VALUE
CONTINUOUS CHANGE
RANDOM
PREDETERMINED LUMINANCE VALUE
PSNR [dB]
Compression Ratio
50
45
40
35
30
25
20
15
10
5
0
0
0.02
0.04
0.06
0.08
0.1
0.12

FIG. 23

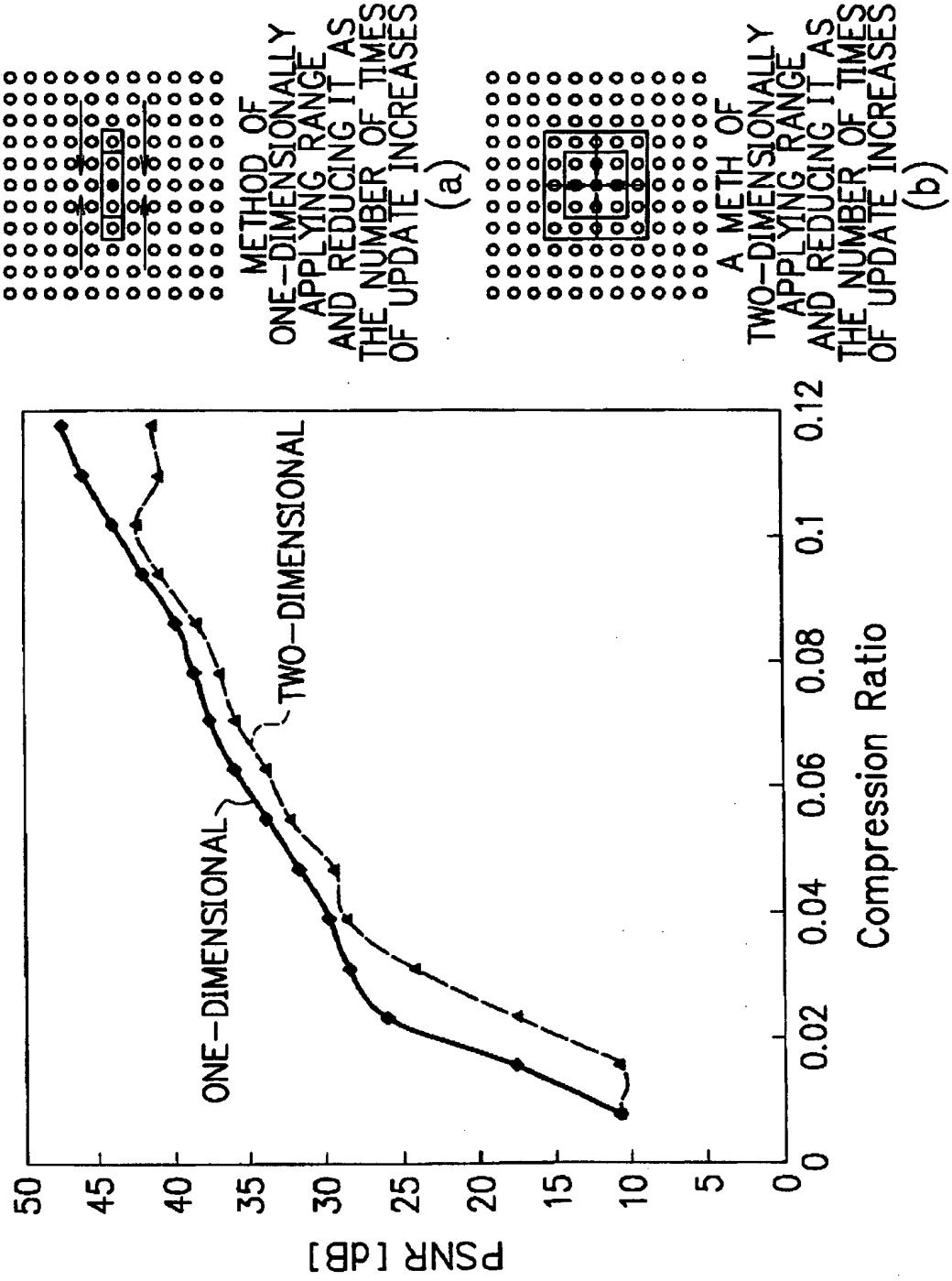

REWRITE RANGE
METHOD OF ONE-DIMENSIONALLY APPLYING RANGE AND REDUCING IT AS THE NUMBER OF TIMES OF UPDATE INCREASES
(a)
A METH OF TWO-DIMENSIONALLY APPLYING RANGE AND REDUCING IT AS THE NUMBER OF TIMES OF UPDATE INCREASES
(b)
ONE-DIMENSIONAL
TWO-DIMENSIONAL
PSNR [dB]
50
45
40
35
30
25
20
15
10
5
0
0
0.02
0.04
0.06
0.08
0.1
0.12
Compression Ratio

FIG. 24

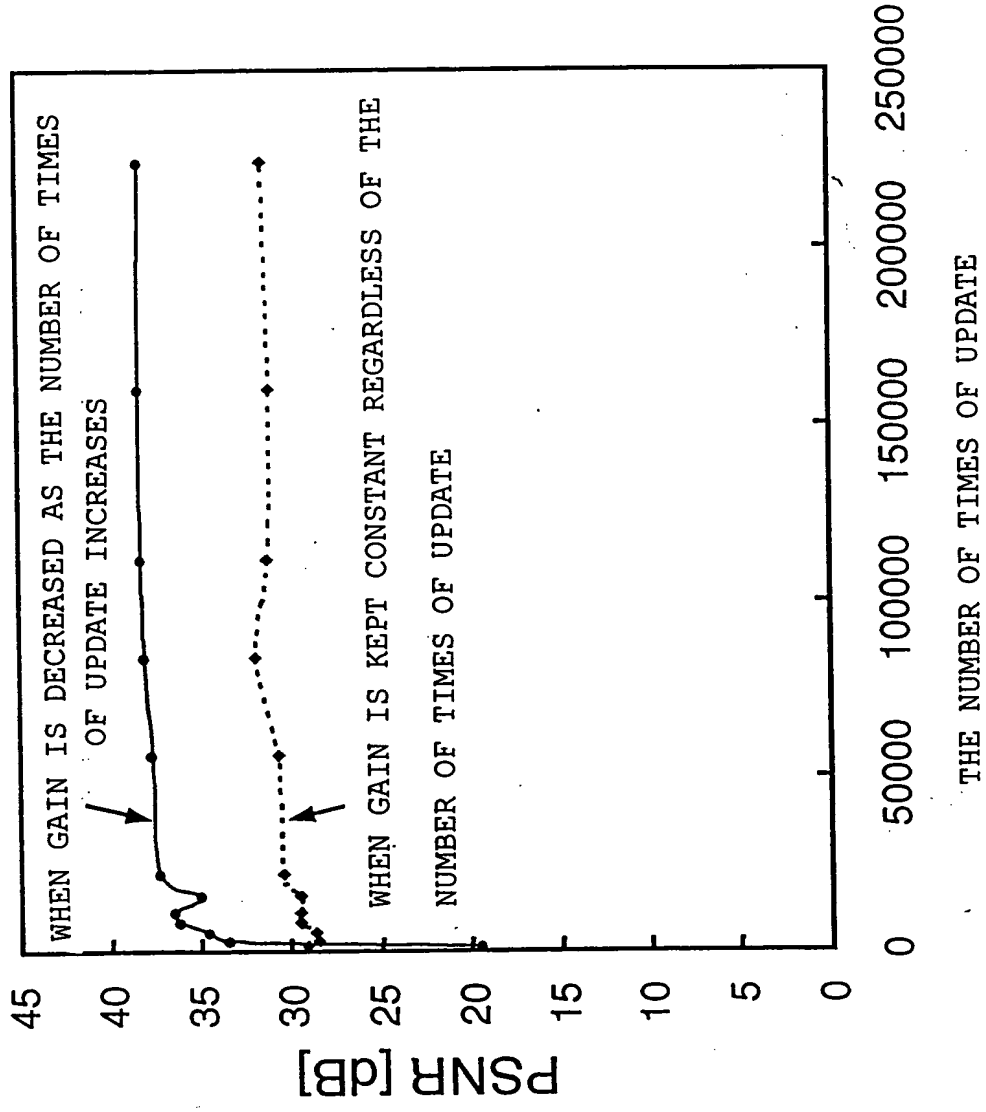

PSNR [dB]
45
40
35
30
25
20
15
10
5
0
0
50000
100000
150000
200000
250000
THE NUMBER OF TIMES OF UPDATE
WHEN GAIN IS DECREASED AS THE NUMBER OF TIMES OF UPDATE INCREASES
WHEN GAIN IS KEPT CONSTANT REGARDLESS OF THE NUMBER OF TIMES OF UPDATE

FIG. 25

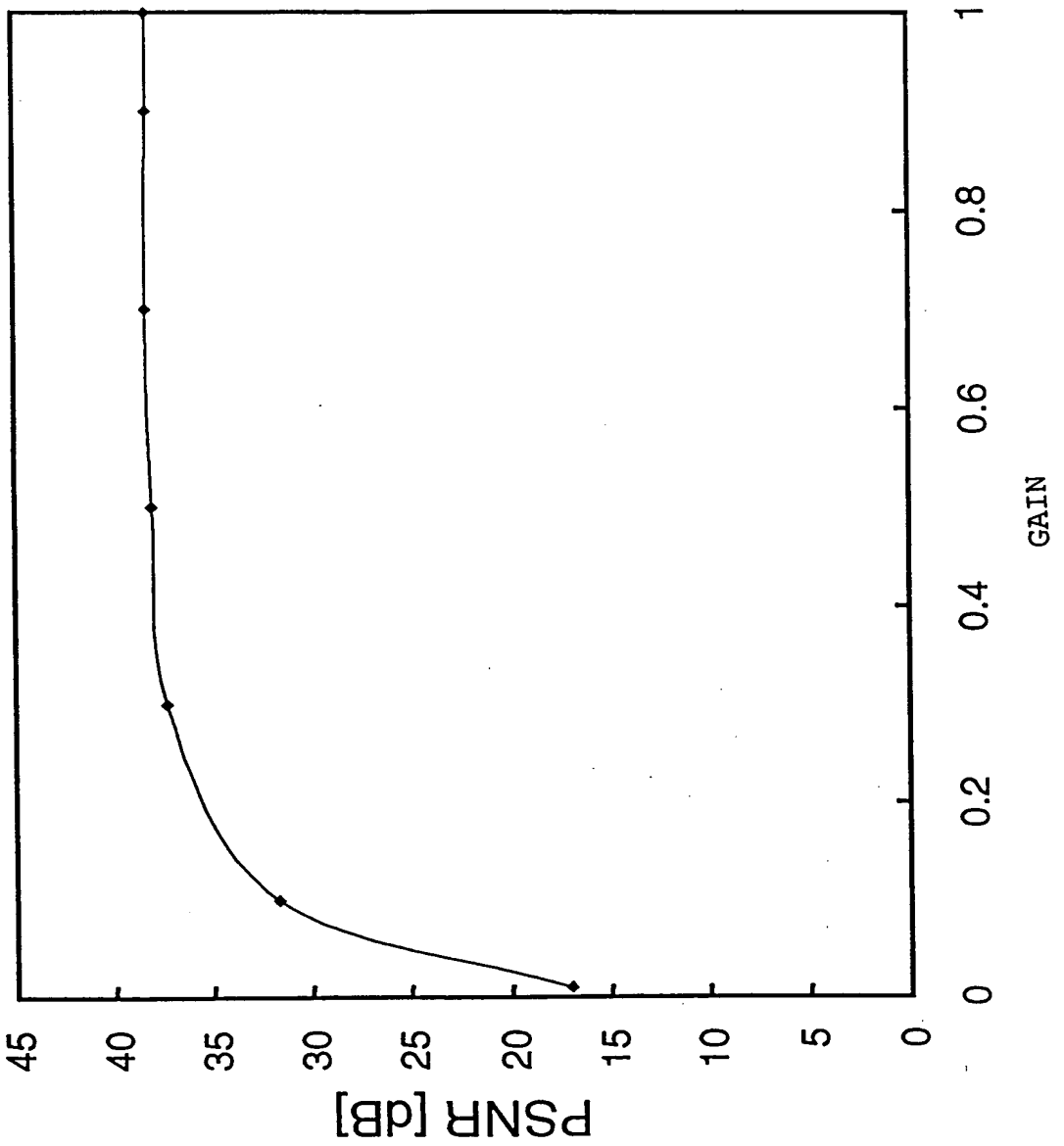


FIG. 26

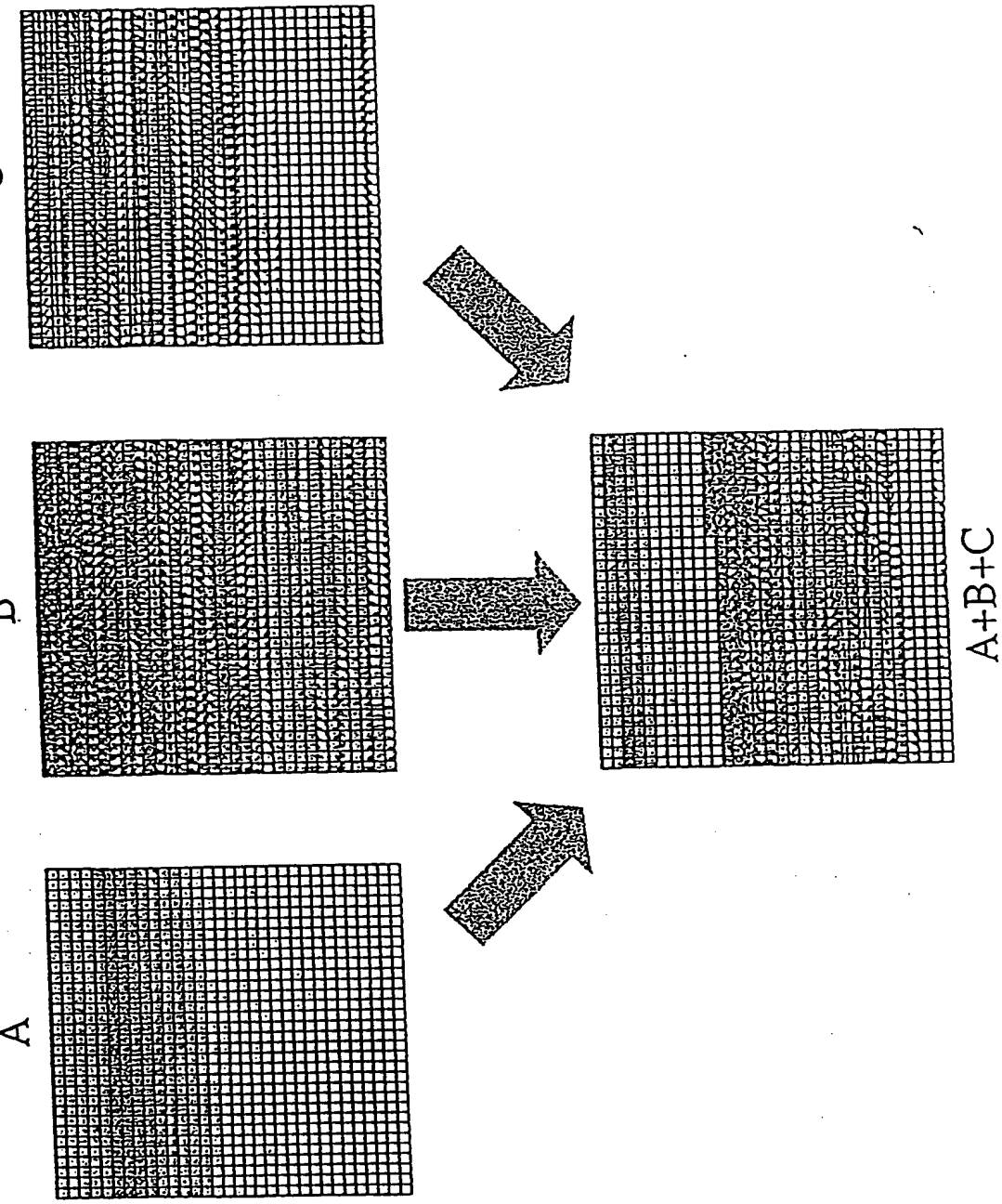


FIG. 27

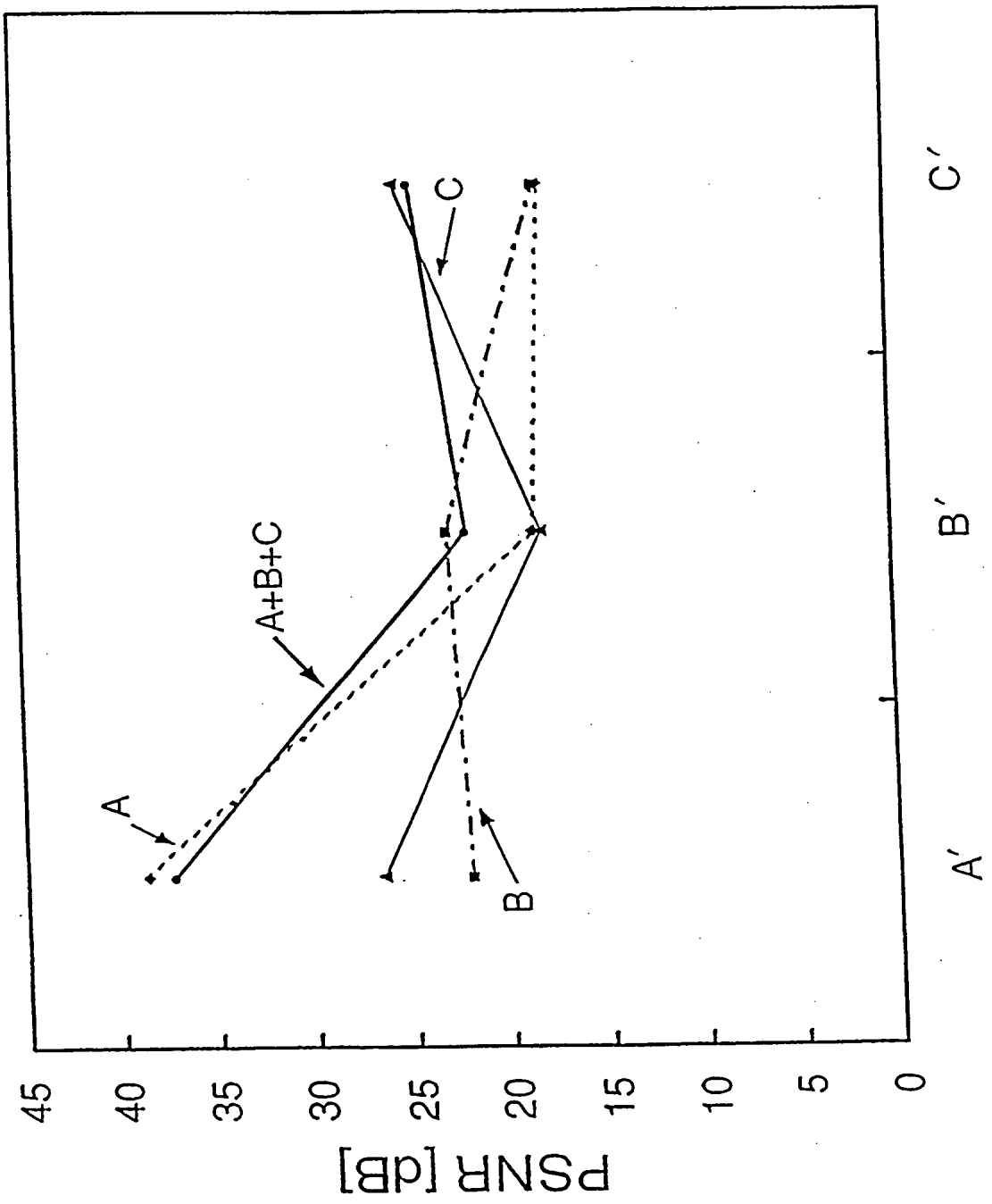


FIG. 28

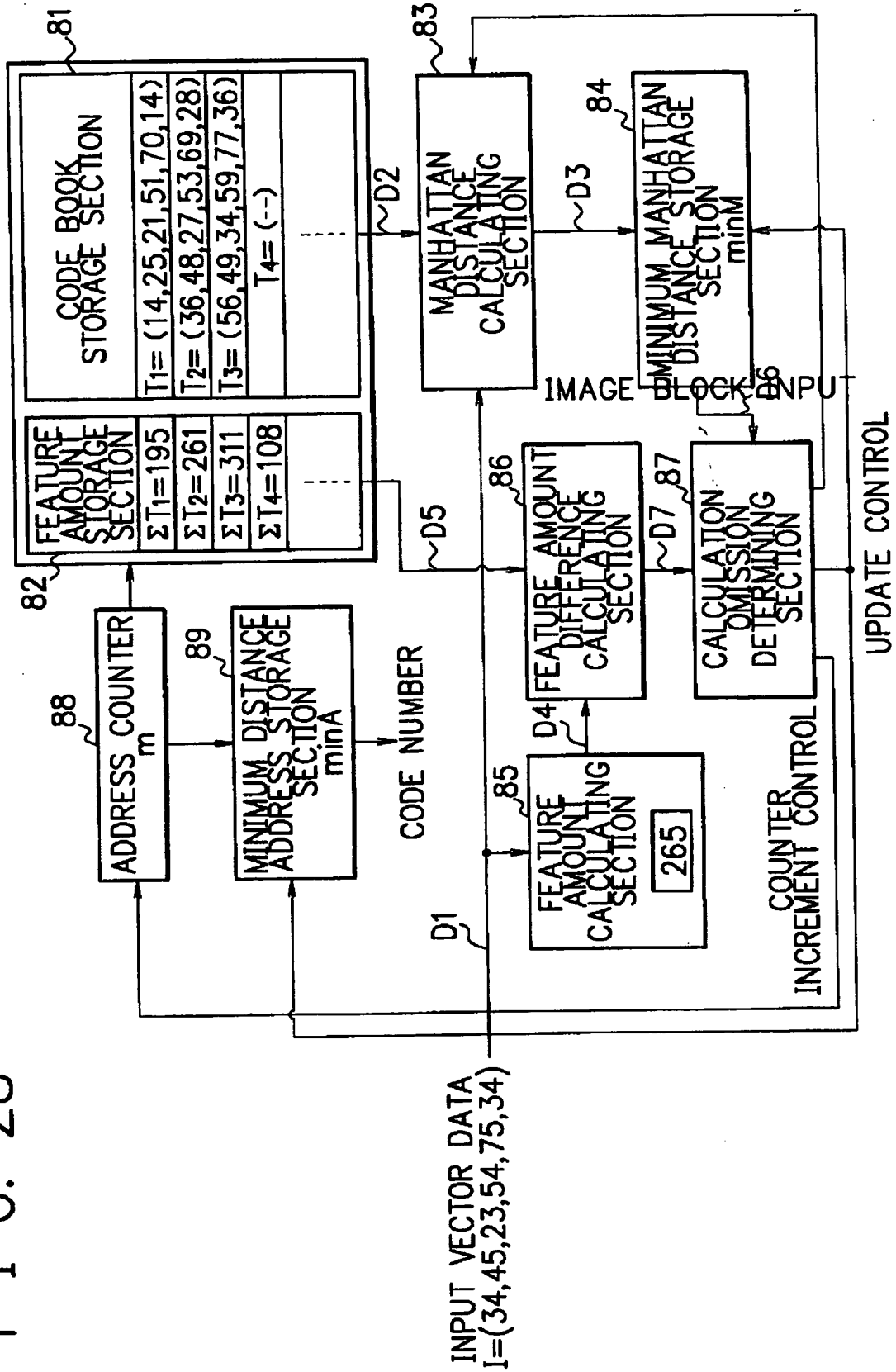

81
CODE BOOK STORAGE SECTION
T1= (14,25,21,51,70,14)
T2= (36,48,27,53,69,28)
T3= (56,49,34,59,77,36)
T4= (--)
FEATURE AMOUNT STORAGE SECTION
ΣT1=195
ΣT2=261
ΣT3=311
ΣT4=108
82
83
MANHATTAN DISTANCE CALCULATING SECTION
D2
84
MINIMUM MANHATTAN DISTANCE STORAGE SECTION minM
D3
IMAGE BLOCK INPUT
86
FEATURE AMOUNT DIFFERENCE CALCULATING SECTION
D5
D7
87
CALCULATION OMISSION DETERMINING SECTION
UPDATE CONTROL
88
ADDRESS COUNTER m
89
MINIMUM DISTANCE ADDRESS STORAGE SECTION minA
CODE NUMBER
D4
85
FEATURE AMOUNT CALCULATING SECTION
265
COUNTER INCREMENT CONTROL
D1
INPUT VECTOR DATA
I=(34,45,23,54,75,34)

FIG. 29

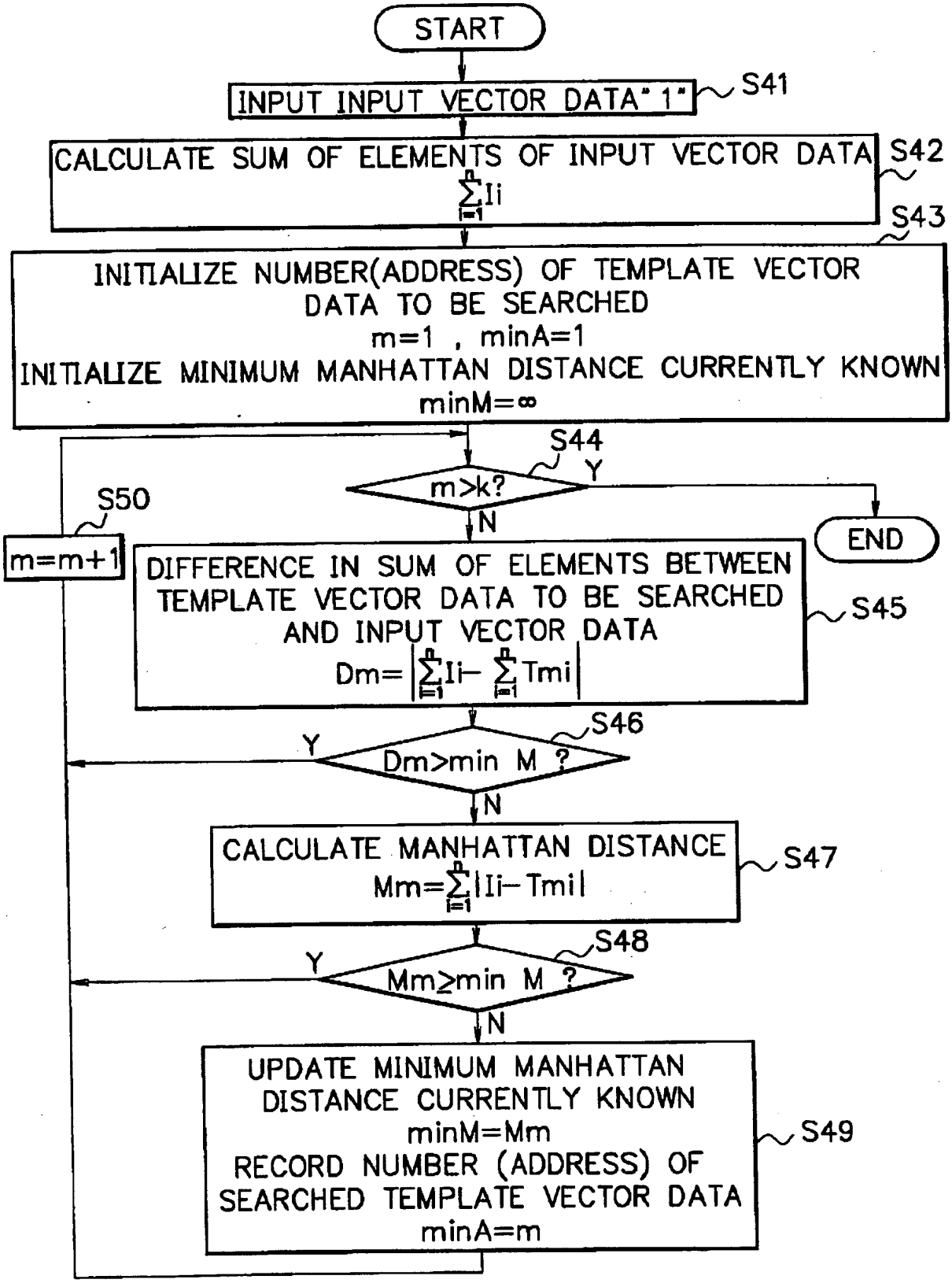

START
INPUT INPUT VECTOR DATA" 1"
S41
CALCULATE SUM OF ELEMENTS OF INPUT VECTOR DATA
$\sum_{i=1}^{n} Ii$
S42
S43
INITIALIZE NUMBER(ADDRESS) OF TEMPLATE VECTOR DATA TO BE SEARCHED
m=1 , minA=1
INITIALIZE MINIMUM MANHATTAN DISTANCE CURRENTLY KNOWN
minM=∞
S44
m>k?
Y
N
END
S50
m=m+1
DIFFERENCE IN SUM OF ELEMENTS BETWEEN TEMPLATE VECTOR DATA TO BE SEARCHED AND INPUT VECTOR DATA
$Dm=\left|\sum_{i=1}^{n} Ii-\sum_{i=1}^{n} Tmi\right|$
S45
S46
Dm>min M ?
Y
N
CALCULATE MANHATTAN DISTANCE
$Mm=\sum_{i=1}^{n}|Ii-Tmi|$
S47
S48
Mm≥min M ?
Y
N
UPDATE MINIMUM MANHATTAN DISTANCE CURRENTLY KNOWN
minM=Mm
RECORD NUMBER (ADDRESS) OF SEARCHED TEMPLATE VECTOR DATA
minA=m
S49

FIG. 30

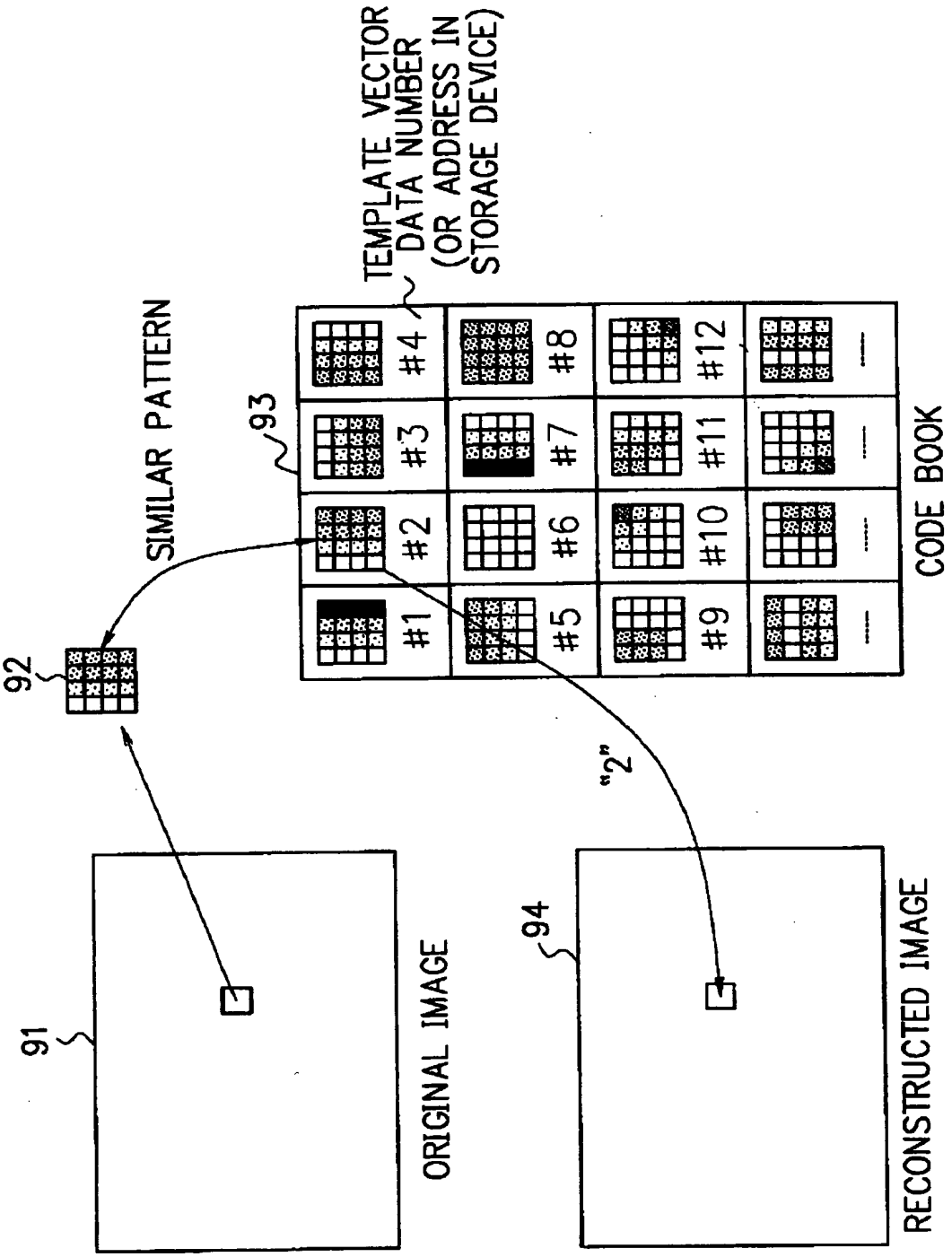

TEMPLATE VECTOR DATA NUMBER (OR ADDRESS IN STORAGE DEVICE)
SIMILAR PATTERN
92
93
CODE BOOK
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12
"2"
91
ORIGINAL IMAGE
94
RECONSTRUCTED IMAGE

FIG. 31

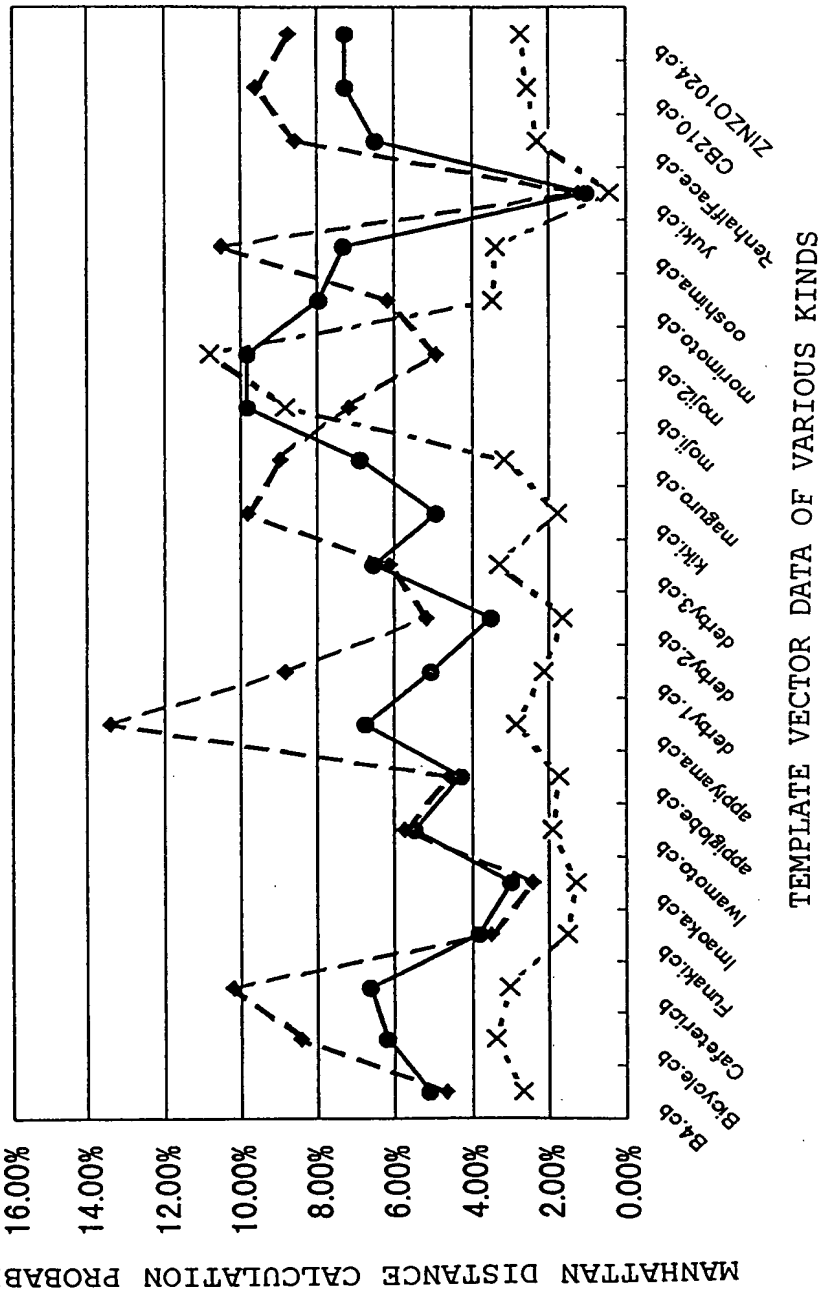

MANHATTAN DISTANCE CALCULATION PROBABILITY
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
TEMPLATE VECTOR DATA OF VARIOUS KINDS
B4.cb
Bicycle.cb
Cafeteri.cb
Funaki.cb
Imaoka.cb
Iwamoto.cb
AppleBobe.cb
Appliyama.cb
derby1.cb
derby2.cb
derby3.cb
kiki.cb
maguro.cb
moji.cb
moji2.cb
morimoto.cb
ooshima.cb
Yuki.cb
TenhalfFace.cb
CB210.cb
ZINZO1024.cb

FIG. 32

FIG. 33

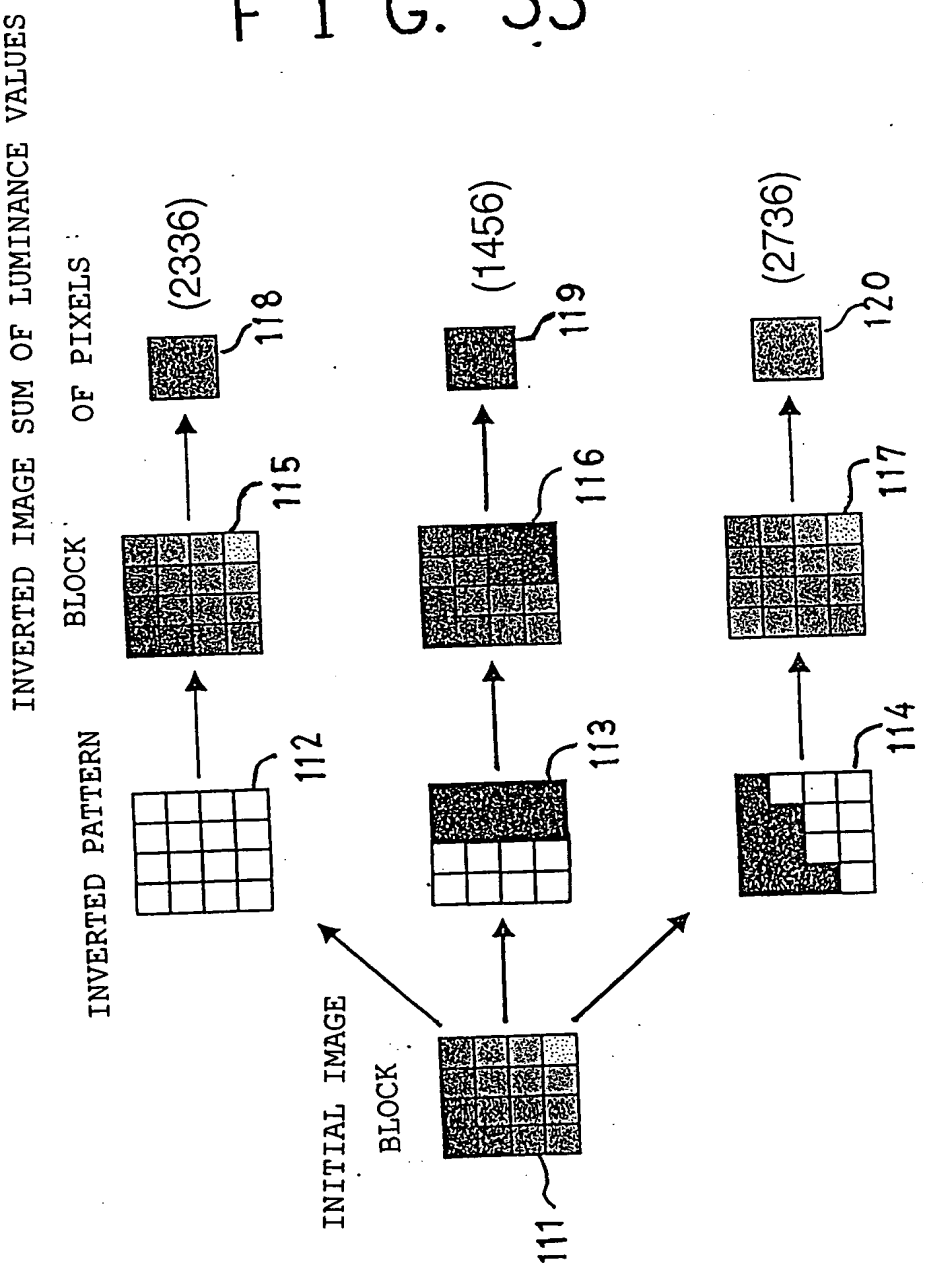

INVERTED IMAGE SUM OF LUMINANCE VALUES OF PIXELS
BLOCK
INVERTED PATTERN
INITIAL IMAGE
BLOCK
(2336)
(1456)
(2736)
111
112
113
114
115
116
117
118
119
120

FIG. 34

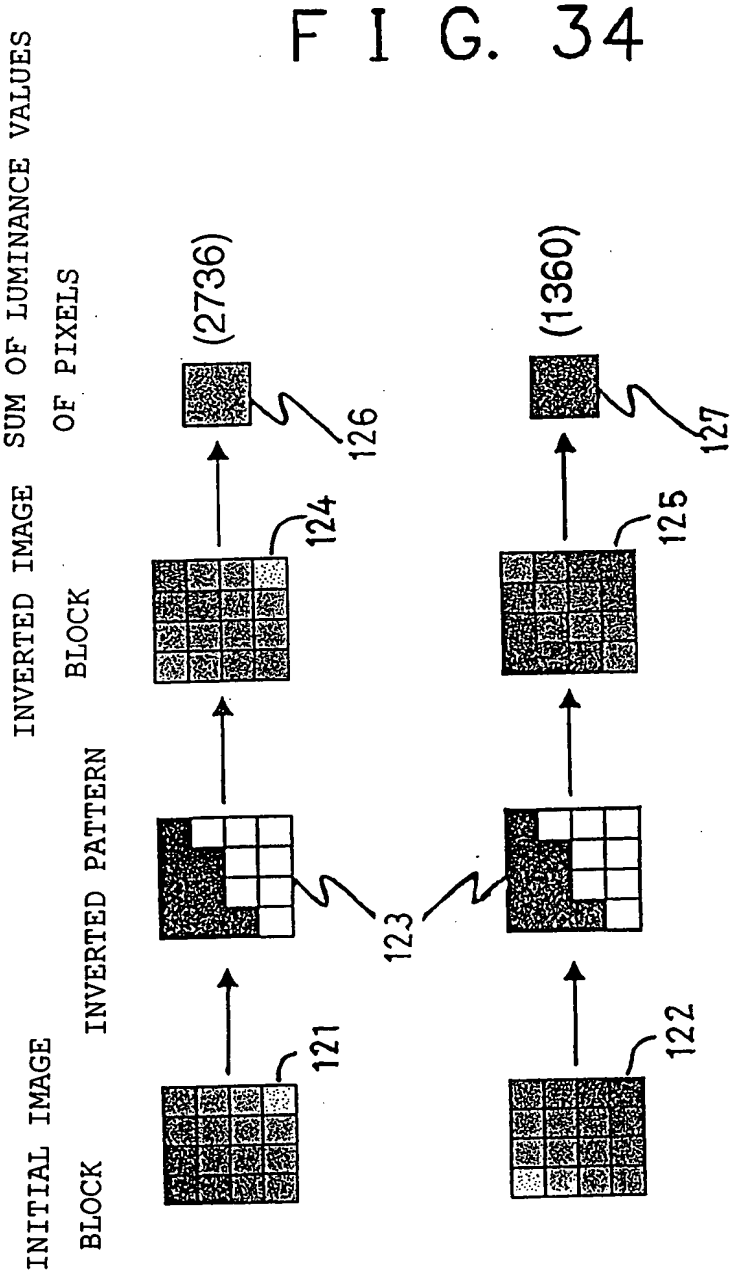

INITIAL IMAGE BLOCK
INVERTED PATTERN BLOCK
INVERTED IMAGE BLOCK
SUM OF LUMINANCE VALUES OF PIXELS
121
122
123
124
125
126
127
(2736)
(1360)

FIG. 35

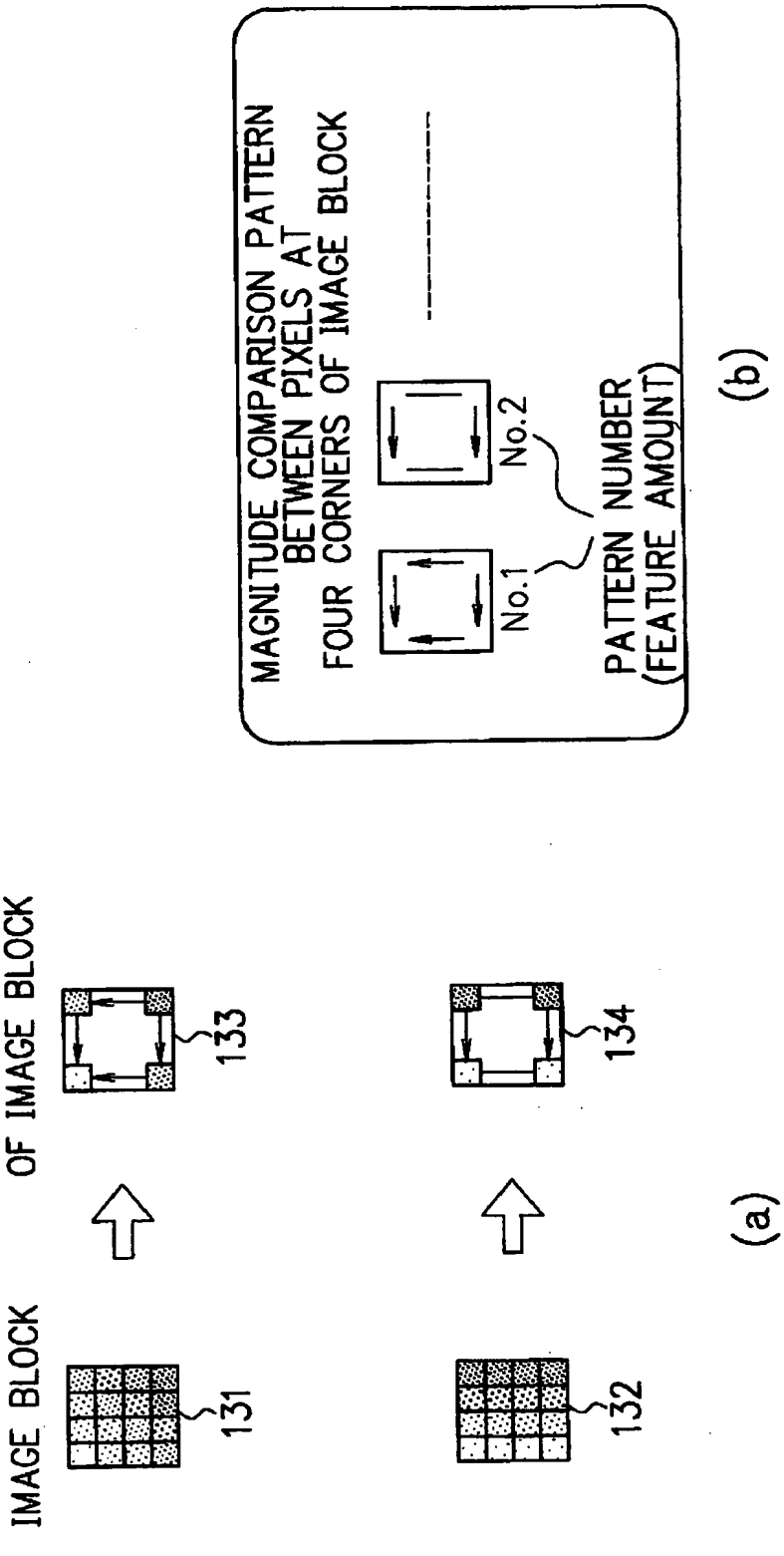


IMAGE BLOCK
131
132
FOUR CORNERS OF IMAGE BLOCK
133
134
(a)
MAGNITUDE COMPARISON PATTERN BETWEEN PIXELS AT FOUR CORNERS OF IMAGE BLOCK
No.1
No.2
PATTERN NUMBER (FEATURE AMOUNT)
(b)

FIG. 36

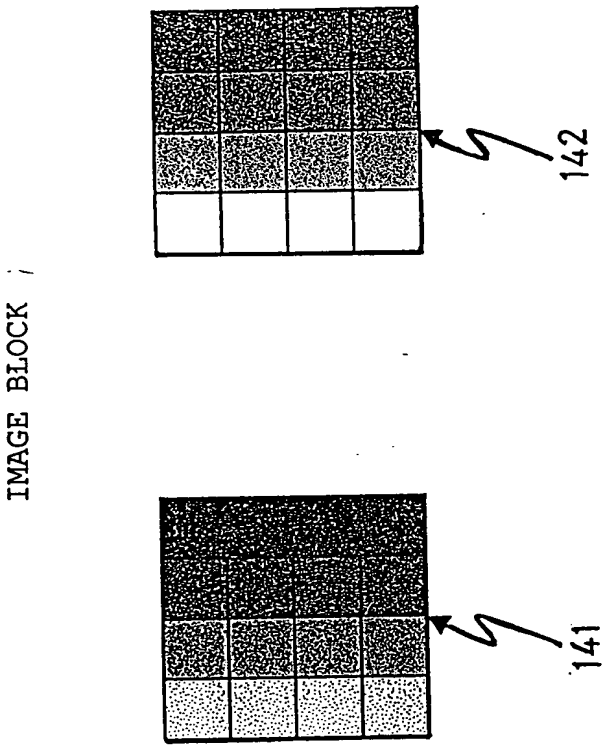


FIG. 37

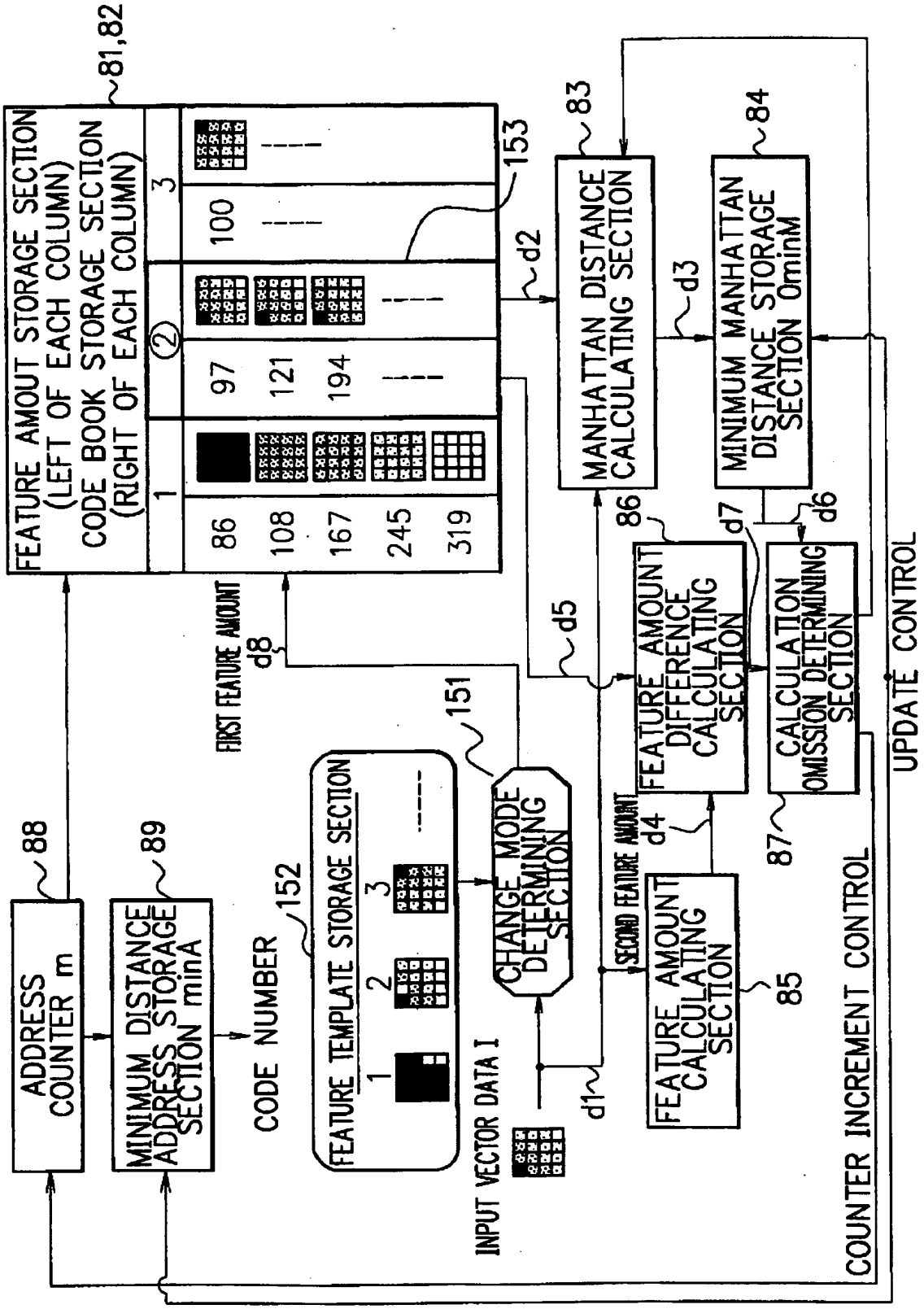
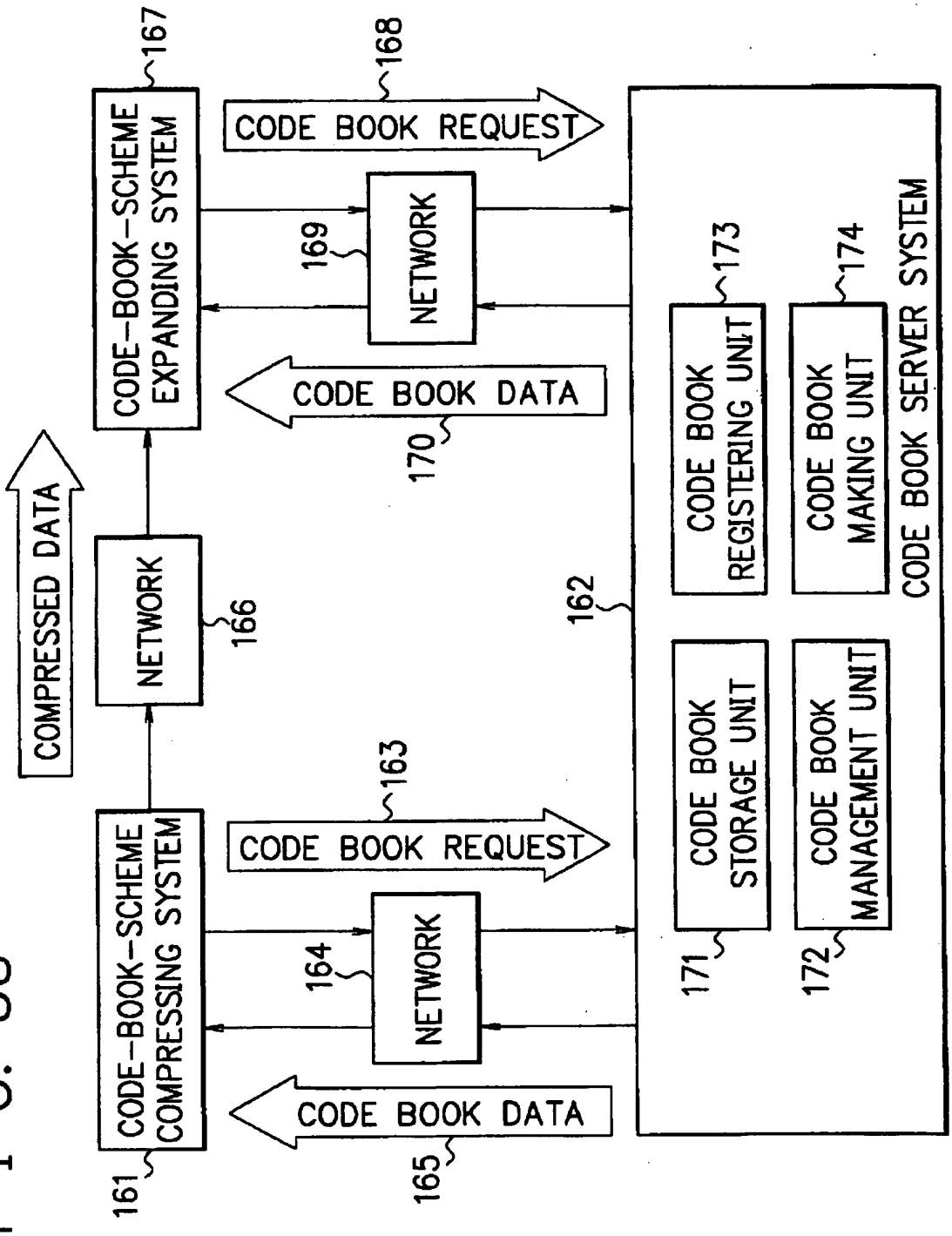

FEATURE AMOUT STORAGE SECTION (LEFT OF EACH COLUMN) CODE BOOK STORAGE SECTION (RIGHT OF EACH COLUMN)
81,82
1
2
3
86
108
167
245
319
97
121
194
100
153
ADDRESS COUNTER m
88
MINIMUM DISTANCE ADDRESS STORAGE SECTION minA
89
CODE NUMBER
152
FEATURE TEMPLATE STORAGE SECTION
151
INPUT VECTOR DATA I
CHANGE MODE DETERMINING SECTION
FIRST FEATURE AMOUNT
d8
d1
d2
d3
d4
d5
d6
d7
MANHATTAN DISTANCE CALCULATING SECTION
83
MINIMUM MANHATTAN DISTANCE STORAGE SECTION OminM
84
FEATURE AMOUNT DIFFERENCE CALCULATING SECTION
86
FEATURE AMOUNT CALCULATING SECTION
85
SECOND FEATURE AMOUNT
CALCULATION OMISSION DETERMINING SECTION
87
UPDATE CONTROL
COUNTER INCREMENT CONTROL

FIG. 38


CODE-BOOK-SCHEME COMPRESSING SYSTEM
161
CODE-BOOK-SCHEME EXPANDING SYSTEM
167
CODE BOOK REQUEST
168
CODE BOOK REQUEST
163
NETWORK
164
NETWORK
169
NETWORK
166
CODE BOOK DATA
165
CODE BOOK DATA
170
COMPRESSED DATA
CODE BOOK SERVER SYSTEM
162
CODE BOOK STORAGE UNIT
171
CODE BOOK MANAGEMENT UNIT
172
CODE BOOK REGISTERING UNIT
173
CODE BOOK MAKING UNIT
174

F I G. 39

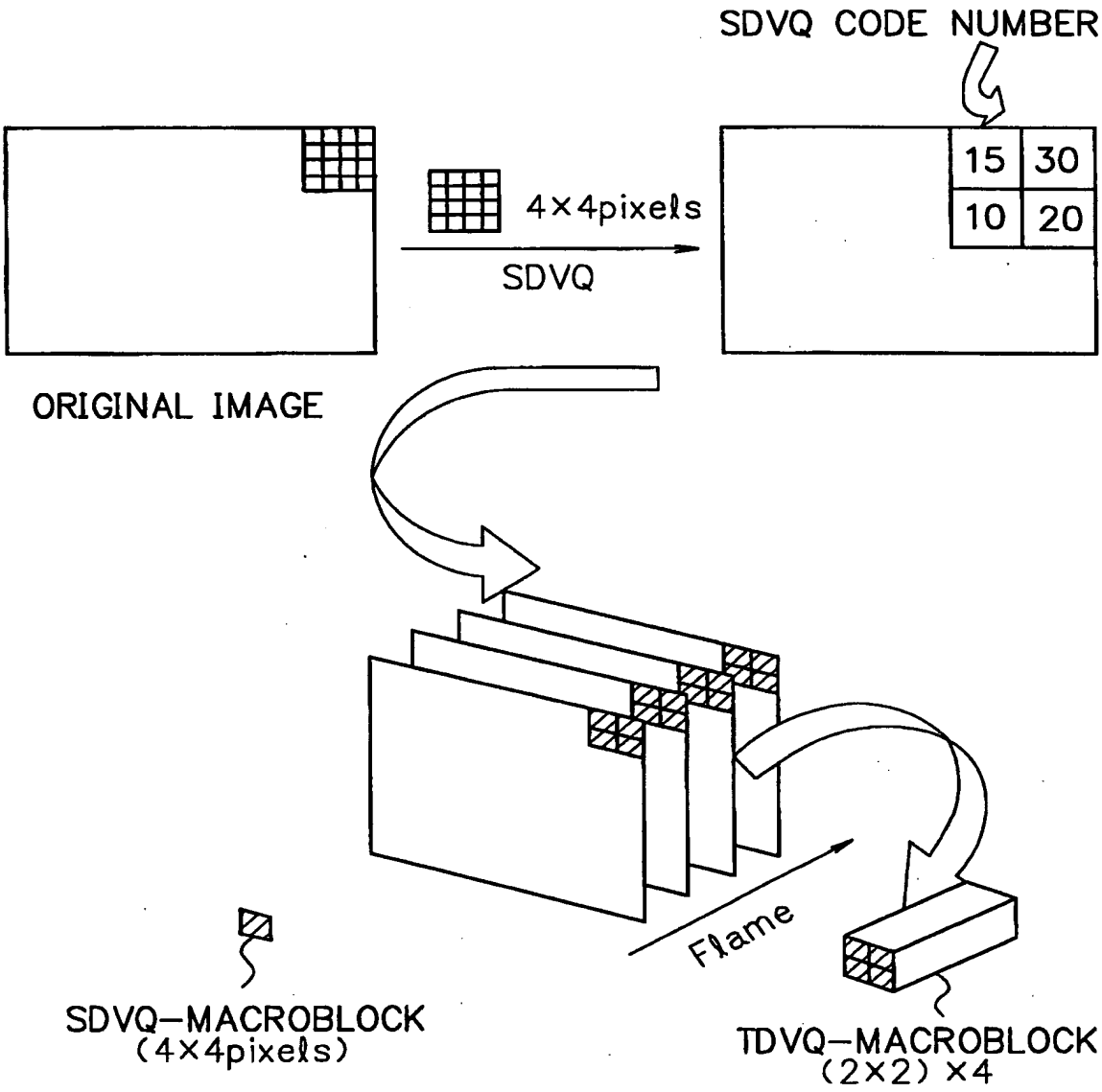

SDVQ CODE NUMBER
15
30
10
20
4×4pixels
SDVQ
ORIGINAL IMAGE
Flame
SDVQ–MACROBLOCK
(4×4pixels)
TDVQ–MACROBLOCK
(2×2) ×4

FIG. 40

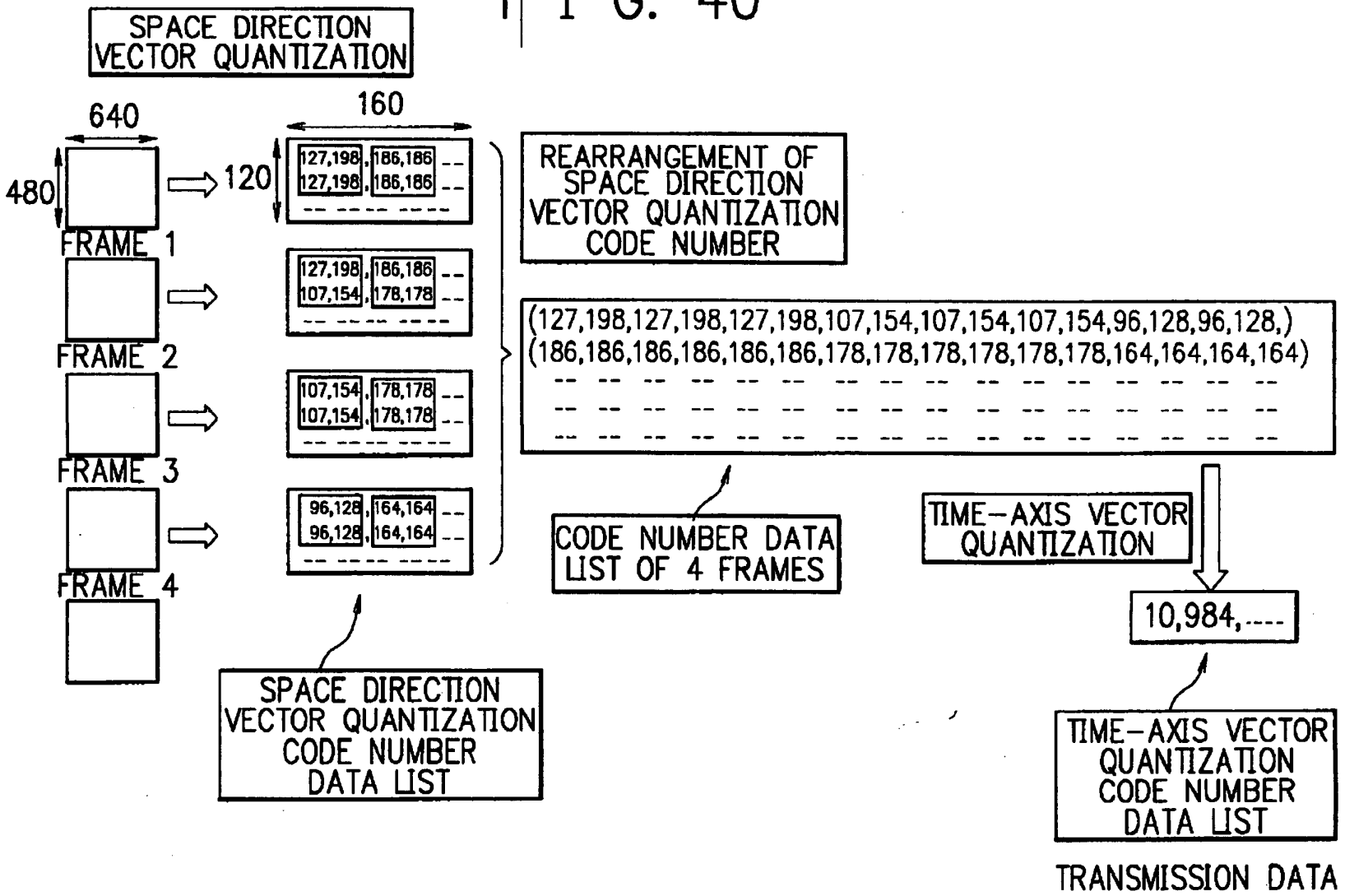


FIG. 41

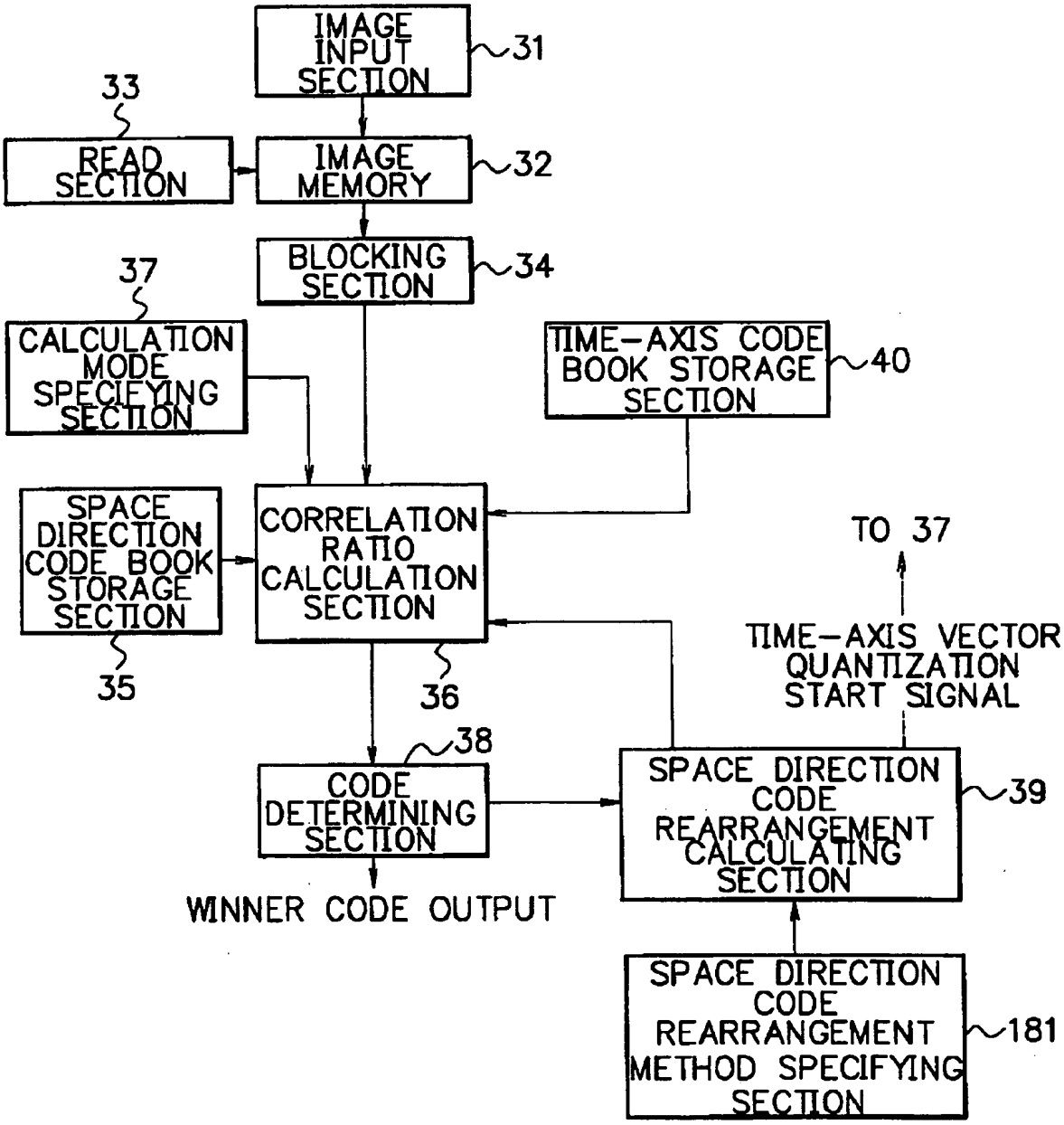


IMAGE INPUT SECTION
31
33
READ SECTION
IMAGE MEMORY
32
BLOCKING SECTION
34
37
CALCULATION MODE SPECIFYING SECTION
TIME-AXIS CODE BOOK STORAGE SECTION
40
SPACE DIRECTION CODE BOOK STORAGE SECTION
35
CORRELATION RATIO CALCULATION SECTION
36
TO 37
TIME-AXIS VECTOR QUANTIZATION START SIGNAL
38
CODE DETERMINING SECTION
SPACE DIRECTION CODE REARRANGEMENT CALCULATING SECTION
39
WINNER CODE OUTPUT
SPACE DIRECTION CODE REARRANGEMENT METHOD SPECIFYING SECTION
181

FIG. 42

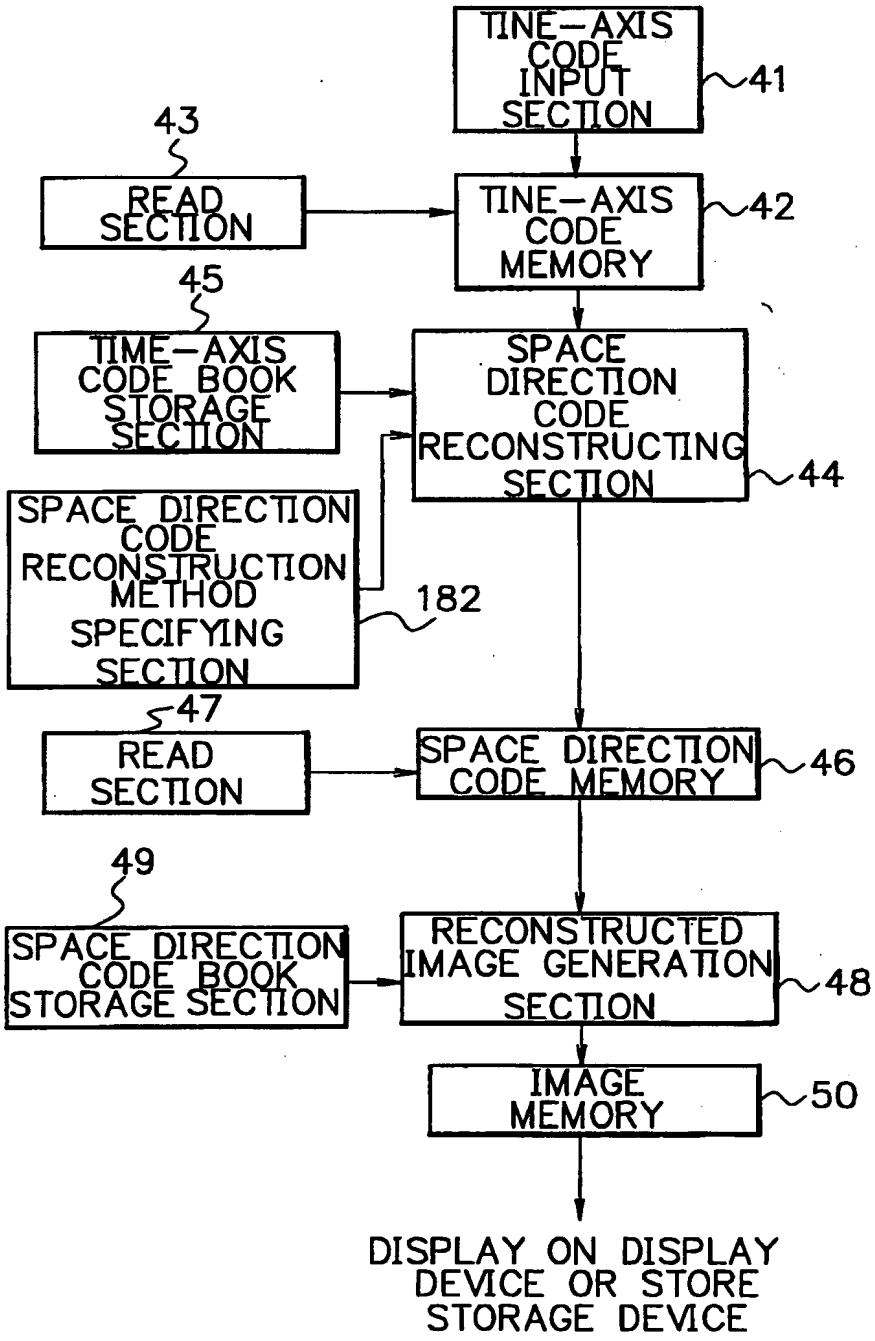

TINE-AXIS CODE INPUT SECTION
41
43
READ SECTION
TINE-AXIS CODE MEMORY
42
45
TIME-AXIS CODE BOOK STORAGE SECTION
SPACE DIRECTION CODE RECONSTRUCTING SECTION
44
SPACE DIRECTION CODE RECONSTRUCTION METHOD SPECIFYING SECTION
182
47
READ SECTION
SPACE DIRECTION CODE MEMORY
46
49
SPACE DIRECTION CODE BOOK STORAGE SECTION
RECONSTRUCTED IMAGE GENERATION SECTION
48
IMAGE MEMORY
50
DISPLAY ON DISPLAY DEVICE OR STORE STORAGE DEVICE

FIG. 43

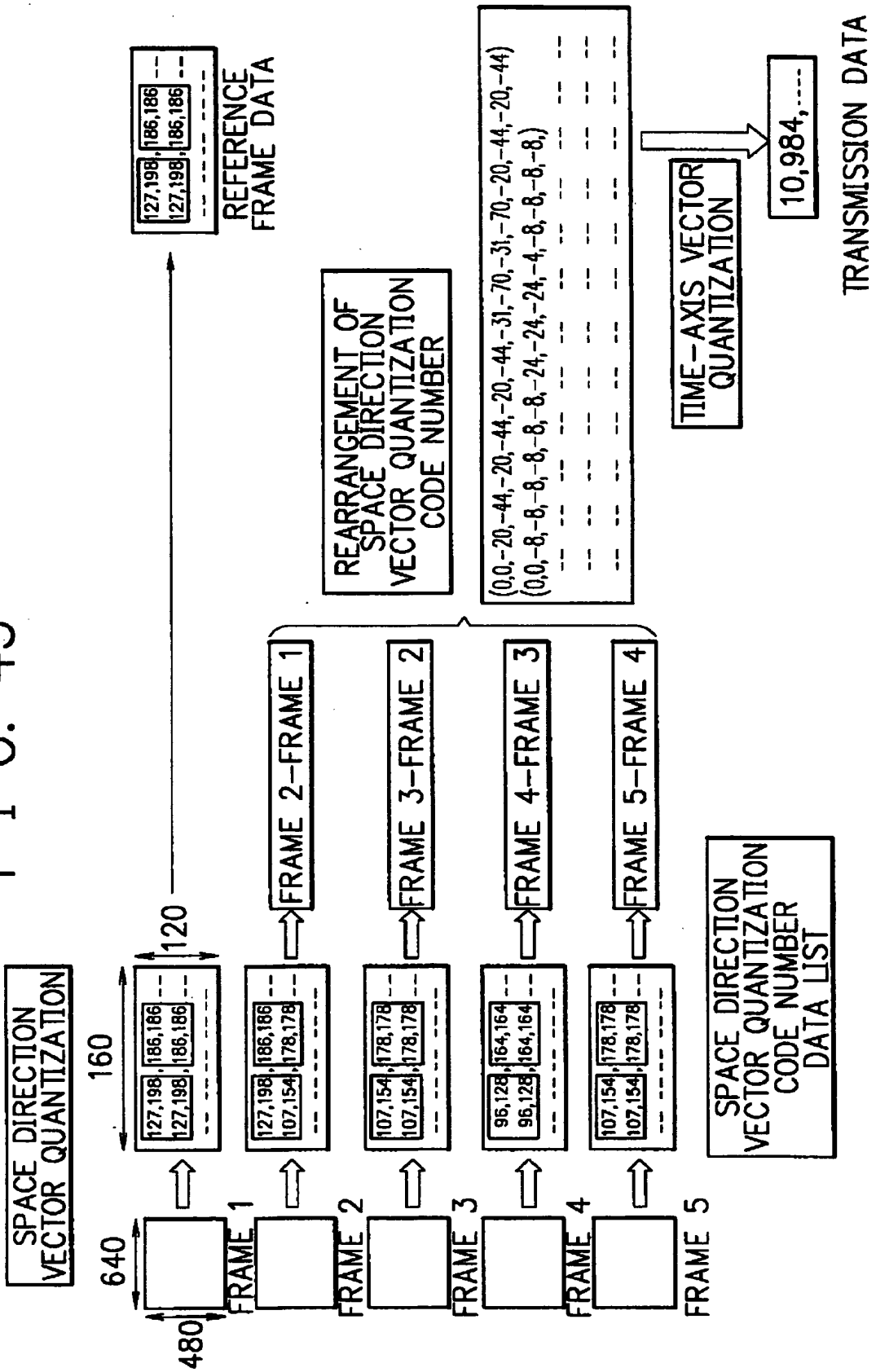


FIG. 44

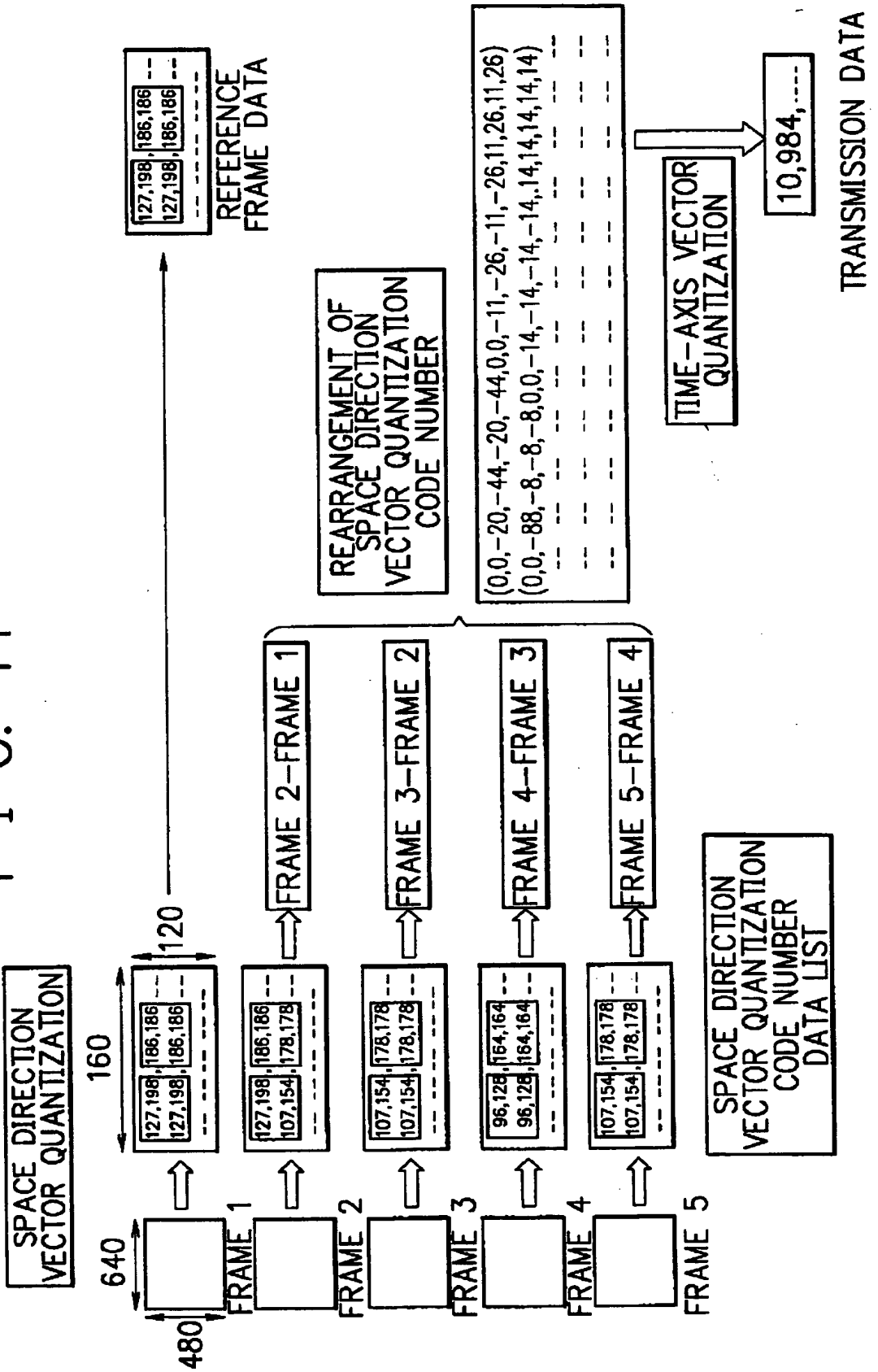

SPACE DIRECTION VECTOR QUANTIZATION
640
480
160
120
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
127,198 186,186
127,198 186,186
127,198 186,186
107,154 178,178
96,128 164,164
REFERENCE FRAME DATA
FRAME 2–FRAME 1
FRAME 3–FRAME 2
FRAME 4–FRAME 3
FRAME 5–FRAME 4
REARRANGEMENT OF SPACE DIRECTION VECTOR QUANTIZATION CODE NUMBER
(0,0,-20,-44,-20,-44,0,0,-11,-26,-11,-26,11,26,11,26)
(0,0,-88,-8,-8,-8,0,0,-14,-14,-14,-14,-14,14,14,14,14)
TIME-AXIS VECTOR QUANTIZATION
10,984,...
TRANSMISSION DATA
SPACE DIRECTION VECTOR QUANTIZATION CODE NUMBER DATA LIST

FIG. 45

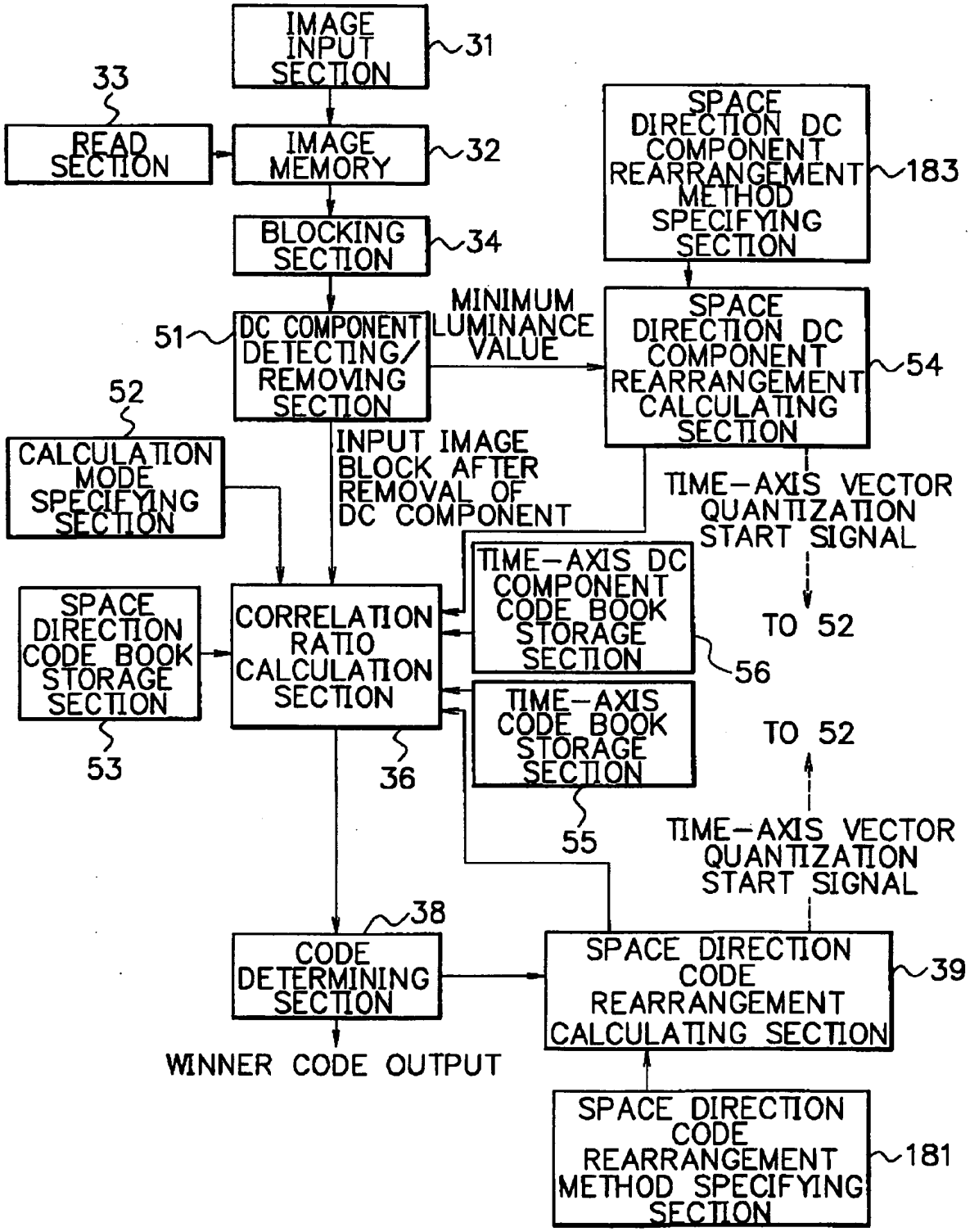


IMAGE INPUT SECTION
31
33
READ SECTION
IMAGE MEMORY
32
BLOCKING SECTION
34
SPACE DIRECTION DC COMPONENT REARRANGEMENT METHOD SPECIFYING SECTION
183
51
DC COMPONENT DETECTING/ REMOVING SECTION
MINIMUM LUMINANCE VALUE
SPACE DIRECTION DC COMPONENT REARRANGEMENT CALCULATING SECTION
54
52
CALCULATION MODE SPECIFYING SECTION
INPUT IMAGE BLOCK AFTER REMOVAL OF DC COMPONENT
TIME-AXIS VECTOR QUANTIZATION START SIGNAL
TIME-AXIS DC COMPONENT CODE BOOK STORAGE SECTION
TO 52
56
SPACE DIRECTION CODE BOOK STORAGE SECTION
CORRELATION RATIO CALCULATION SECTION
TIME-AXIS CODE BOOK STORAGE SECTION
TO 52
53
36
55
TIME-AXIS VECTOR QUANTIZATION START SIGNAL
38
CODE DETERMINING SECTION
SPACE DIRECTION CODE REARRANGEMENT CALCULATING SECTION
39
WINNER CODE OUTPUT
SPACE DIRECTION CODE REARRANGEMENT METHOD SPECIFYING SECTION
181

F I G. 46

RELATIONSHIP BETWEEN COMPRESSION RATIO AND SPACE DIRECTION CODE REARRANGEMENT METHOD

METHOD OF EXTRACTING MACROBLOCK OF SPACE DIRECTION CODE	COMPRESSION TARGET FRAME	COMPRESSION RATIO
1x1	16 FRAMES	1/341
2x2	4 FRAMES	1/341
4x1	4 FRAMES	1/341
4x4	2 FRAMES	1/341
3x3	3 FRAMES	1/576
3x3	4 FRAMES	1/768
4x4	4 FRAMES	1/1365
6x6	6 FRAMES	1/4608
8x8	8 FRAMES	1/10922

FIG. 47

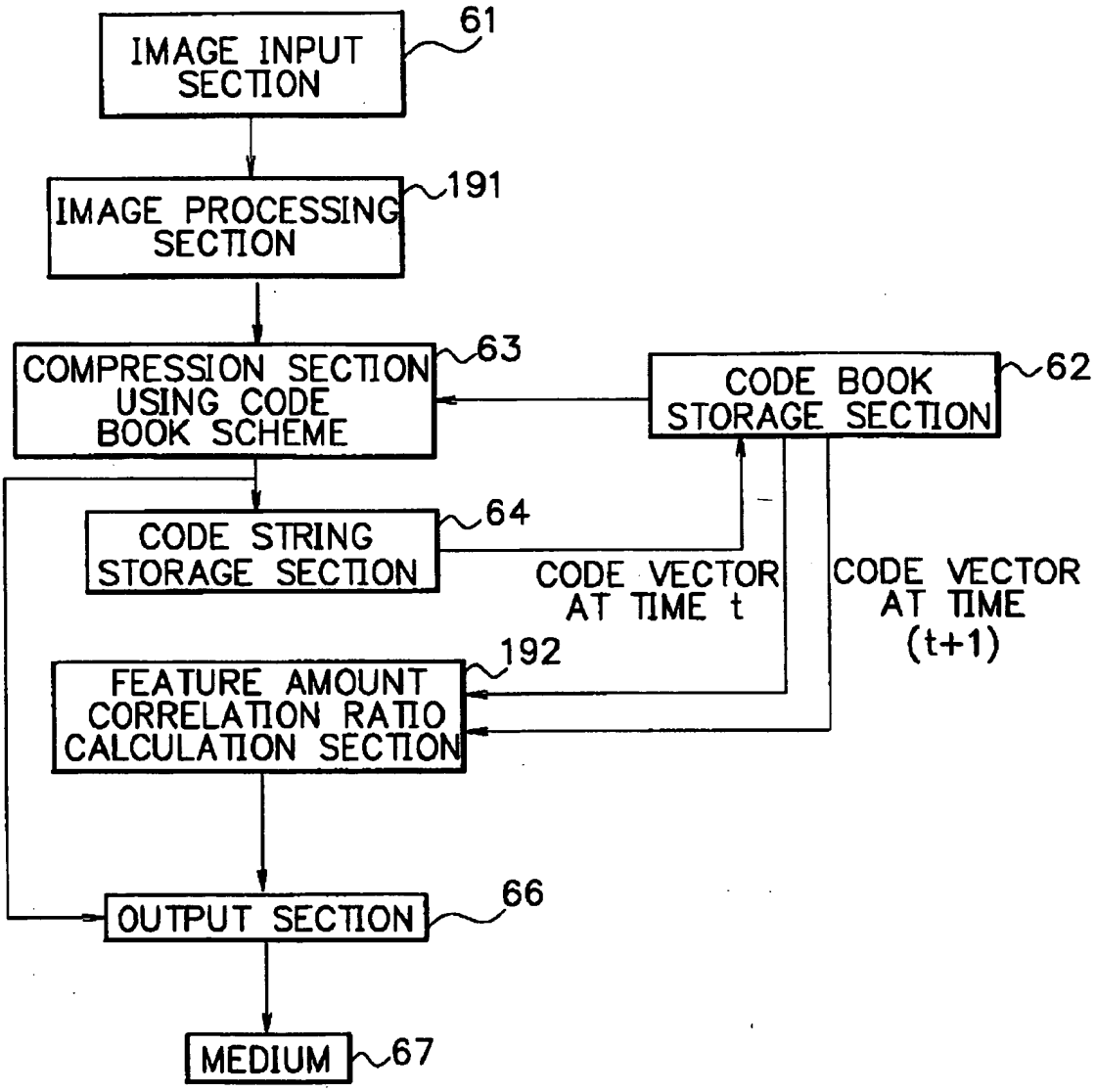


IMAGE INPUT SECTION
61
IMAGE PROCESSING SECTION
191
COMPRESSION SECTION USING CODE BOOK SCHEME
63
CODE BOOK STORAGE SECTION
62
CODE STRING STORAGE SECTION
64
CODE VECTOR AT TIME t
CODE VECTOR AT TIME (t+1)
FEATURE AMOUNT CORRELATION RATIO CALCULATION SECTION
192
OUTPUT SECTION
66
MEDIUM
67

F I G. 48

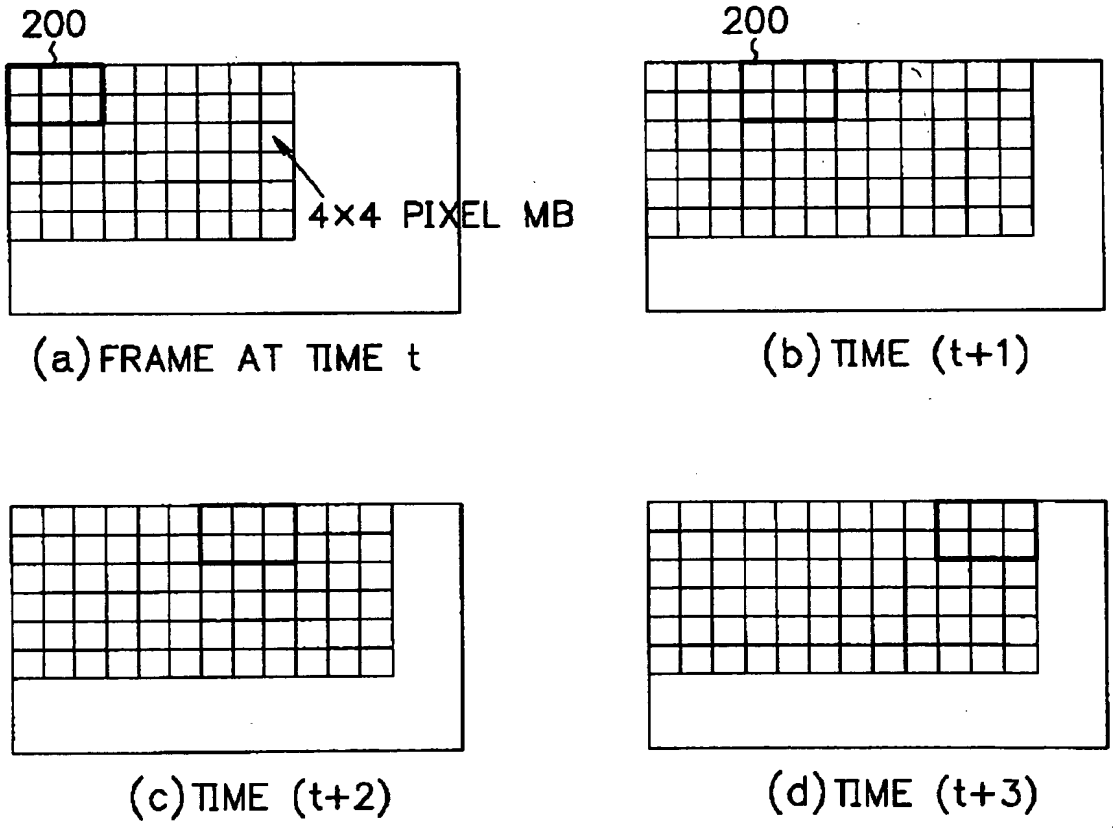


FIG. 49

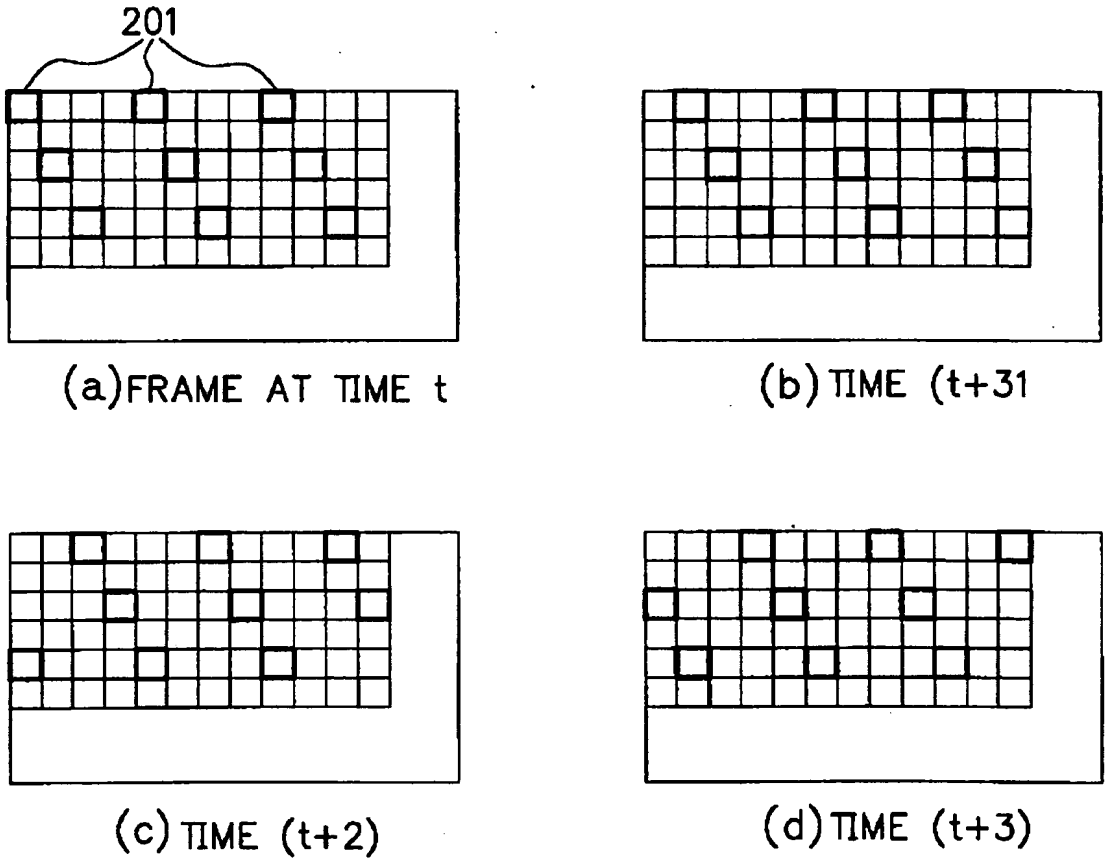


FIG. 50

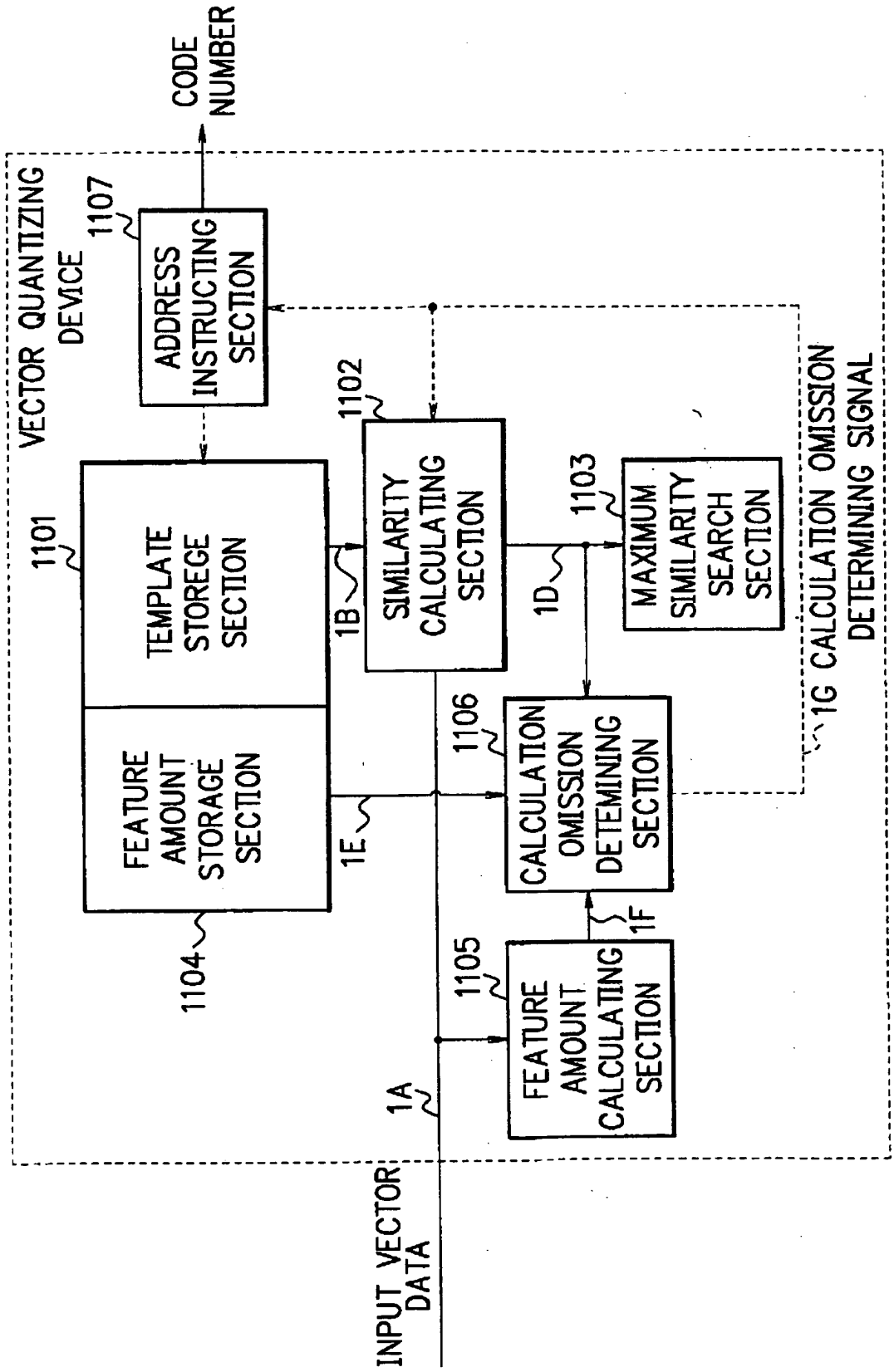
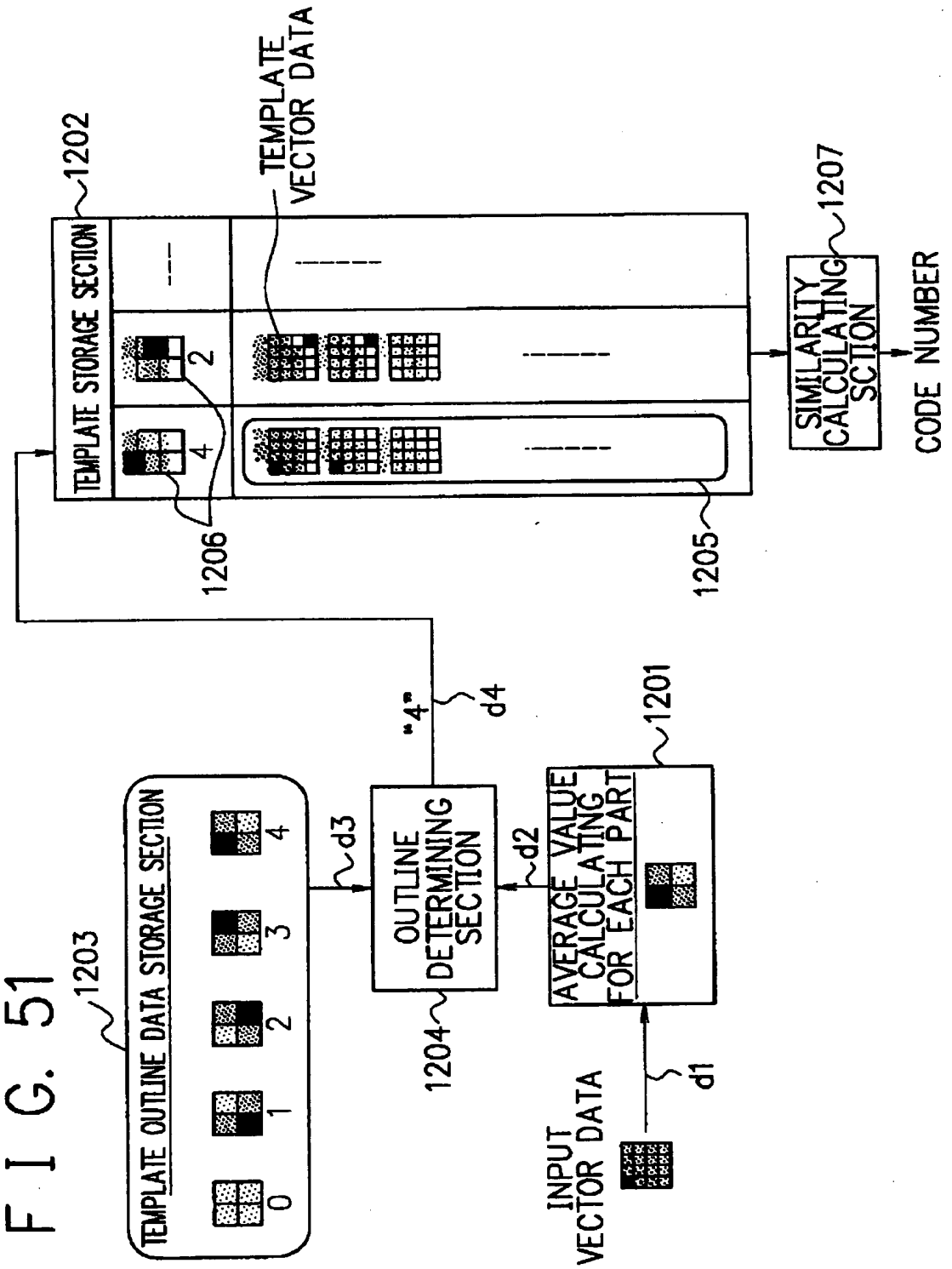

CODE NUMBER
VECTOR QUANTIZING DEVICE
1107
ADDRESS INSTRUCTING SECTION
1102
SIMILARITY CALCULATING SECTION
1103
MAXIMUM SIMILARITY SEARCH SECTION
1101
TEMPLATE STOREGE SECTION
1B
1D
1G CALCULATION OMISSION DETERMINING SIGNAL
1106
CALCULATION OMISSION DETEMINING SECTION
FEATURE AMOUNT STORAGE SECTION
1E
1104
1105
1F
FEATURE AMOUNT CALCULATING SECTION
1A
INPUT VECTOR DATA

FIG. 51


TEMPLATE OUTLINE DATA STORAGE SECTION
1203
0
1
2
3
4
d3
OUTLINE DETERMINING SECTION
1204
"4"
d4
d2
AVERAGE VALUE CALCULATING FOR EACH PART
1201
INPUT VECTOR DATA
d1
TEMPLATE STORAGE SECTION
1202
TEMPLATE VECTOR DATA
1206
1205
SIMILARITY CALCULATING SECTION
1207
CODE NUMBER

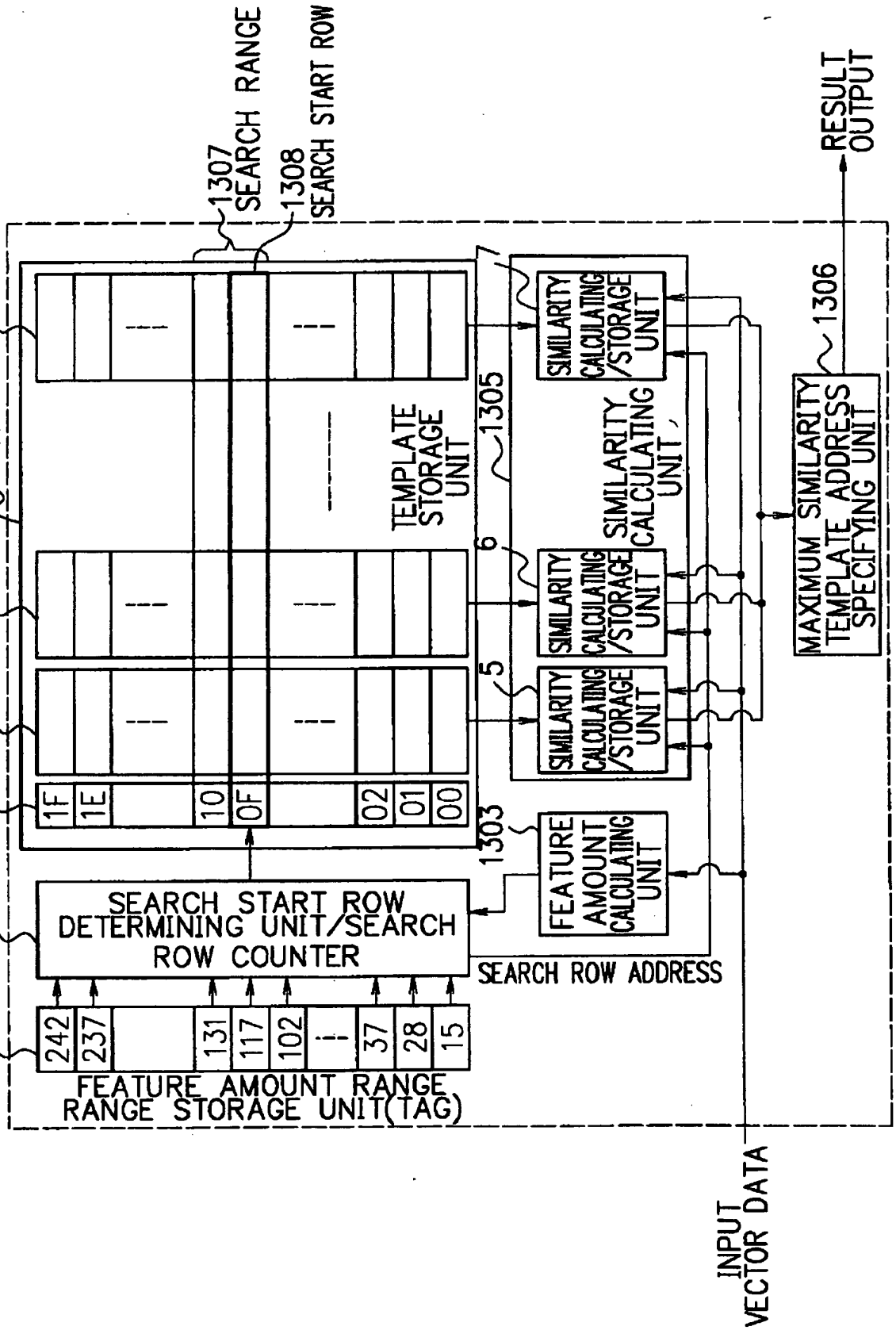

1307
SEARCH RANGE
1308
SEARCH START ROW
RESULT
OUTPUT
1306
MAXIMUM SIMILARITY
TEMPLATE ADDRESS
SPECIFYING UNIT
SIMILARITY
CALCULATING
/STORAGE
UNIT
SIMILARITY
CALCULATING
UNIT
1305
TEMPLATE
STORAGE
UNIT
1301
4
3
2
1
6
5
1F
1E
10
0F
02
01
00
1303
FEATURE
AMOUNT
CALCULATING
UNIT
1304
SEARCH START ROW
DETERMINING UNIT/SEARCH
ROW COUNTER
SEARCH ROW ADDRESS
1302
242
237
131
117
102
37
28
15
FEATURE AMOUNT RANGE
RANGE STORAGE UNIT(TAG)
INPUT
VECTOR DATA

FIG. 52

FIG. 53

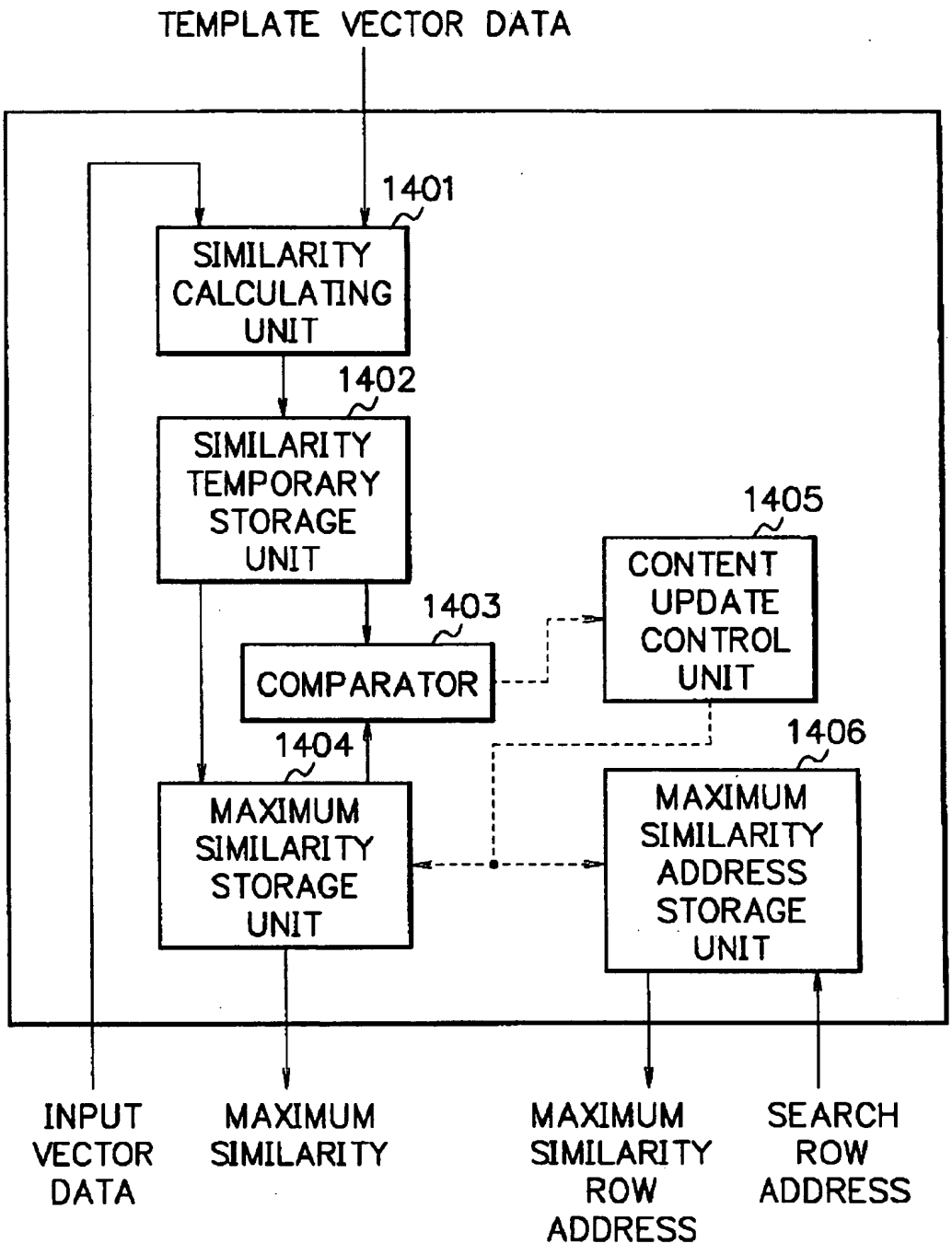
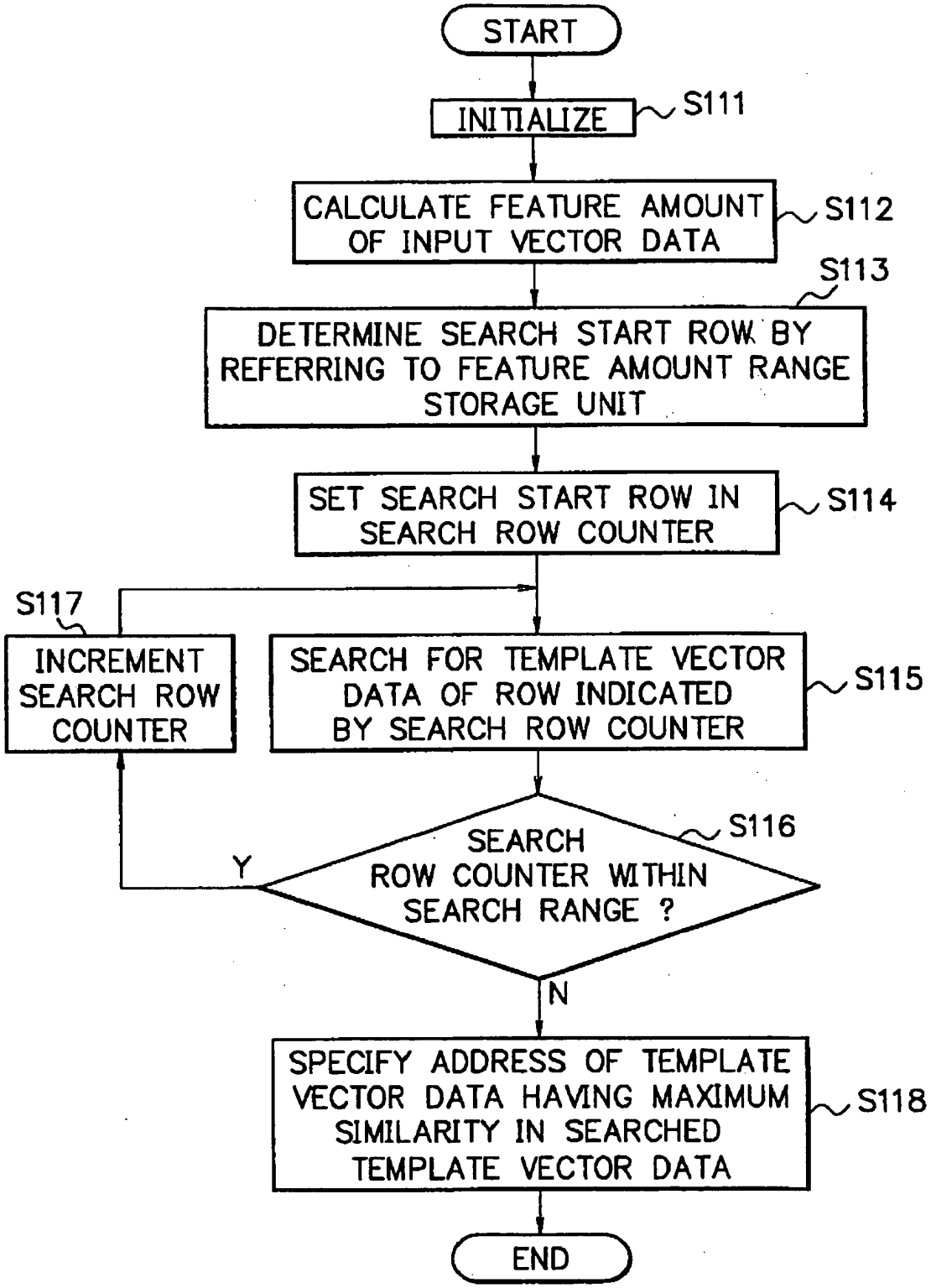

TEMPLATE VECTOR DATA
1401
SIMILARITY CALCULATING UNIT
1402
SIMILARITY TEMPORARY STORAGE UNIT
1403
COMPARATOR
1404
MAXIMUM SIMILARITY STORAGE UNIT
1405
CONTENT UPDATE CONTROL UNIT
1406
MAXIMUM SIMILARITY ADDRESS STORAGE UNIT
INPUT VECTOR DATA
MAXIMUM SIMILARITY
MAXIMUM SIMILARITY ROW ADDRESS
SEARCH ROW ADDRESS

FIG. 54


START
INITIALIZE
S111
CALCULATE FEATURE AMOUNT OF INPUT VECTOR DATA
S112
S113
DETERMINE SEARCH START ROW BY REFERRING TO FEATURE AMOUNT RANGE STORAGE UNIT
SET SEARCH START ROW IN SEARCH ROW COUNTER
S114
S117
INCREMENT SEARCH ROW COUNTER
SEARCH FOR TEMPLATE VECTOR DATA OF ROW INDICATED BY SEARCH ROW COUNTER
S115
S116
SEARCH ROW COUNTER WITHIN SEARCH RANGE ?
Y
N
SPECIFY ADDRESS OF TEMPLATE VECTOR DATA HAVING MAXIMUM SIMILARITY IN SEARCHED TEMPLATE VECTOR DATA
S118
END